



Gustav Wiedeke & Co.

Dayton, Ohio, U. S. A.



PATENTEES AND MANUFACTURERS

OF THE

IDEAL TUBE EXPANDERS

AND

IDEAL TUBE CUTTERS



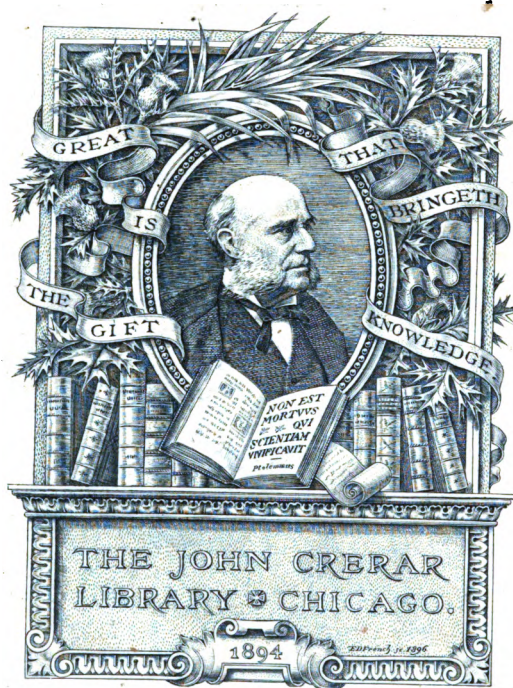
IDEAL CATALOGUE No. 7

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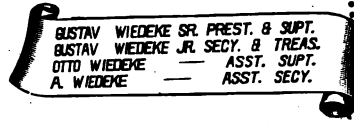




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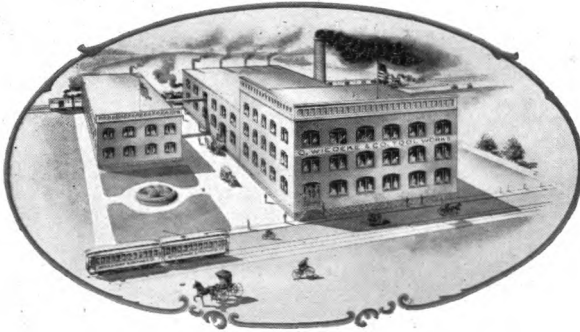
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Gustav Wiedeke & Co.

Dayton, Ohio, U. S. A.

(Established 1892)



Patentees and Manufacturers of the

Ideal Tube Expanders *and* Ideal Tube Cutters



IDEAL CATALOGUE No. 7

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Introduction

The tools illustrated in this, our latest catalogue, with the exception of a few, are made solely by us.

It is our aim to give our customers the best we can produce.

Having years of experience, and working exclusively in this particular field to manufacture substantial tools, needed for the manufacture, repair and maintenance of steam boilers, on which we saved neither time or expense to make practical tools, we can safely say, they are the best on the market to-day, embodying perfect designs and principles with efficiency and economy combined.

Our plant is equipped strictly up-to-date, with the most modern machinery, enabling us to fill all orders, small, large or special, on short notice.

Respectfully yours,

GUSTAV WIEDEKE & CO.

TERMS

Our terms are strictly 80 days net, f. o. b., Dayton, Ohio, to all well known houses.

CONTRACTS

All agreements are contingent upon strikes, accidents, delays of carriers and other delays unavoidable, or beyond our control.

Quotations subject to change without notice.

We are not responsible for condition of goods after shipment. Delivery in good order to railroad is considered as delivery to purchaser.

We aim to carry in stock all tools listed in this catalogue with code words, but owing to the change of stock, daily, we cannot promise immediate shipment of any tool.

In filling orders we adhere strictly to instructions given and cannot be responsible if goods are not as desired when details are omitted, or shipped wrong. (See page 50.)

If shipping instructions are omitted, we ship according to our best judgment.

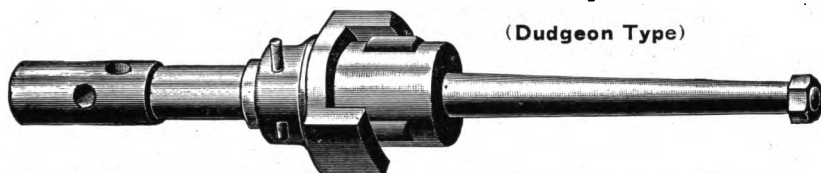
We make no allowance for freight or express charges.

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Standard Roller Tube Expander



(Dudgeon Type)

This Expander has a solid body, thus avoiding constant breaking of cap screws. It is made from the best material and with great care. One Expander will answer for any thickness of tube sheet.

We Carry a Large Stock and can Ship These Promptly.

Diameter, Inches	1	1¼	1½	1¾	1⅞	2	2½	2¼	2½	2¾
List Price, Complete Code Word	\$10.00 sable	10.00 sack	10.00 sacred	10.00 safe	10.00 sage	10.00 sad	12.00 sail	12.00 saint	14.00 salt	16.00 sand
Extra Mandrels each Code Word	\$2.50 scene	2.50 scent	2.50 schedule	2.50 scheme	2.50 school	2.50 science	3.00 scissel	3.00 scold	3.50 scoop	3.50 scorch
Extra Rolls, Set of 3 Code Word	\$1.00 seepert	1.00 seeside	1.00 season	1.00 seam	1.00 seat	1.00 secure	1.15 seed	1.15 seek	1.30 sought	1.45 select
Diameter, Inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price, Complete Code Word	\$18.00 sash	20.00 sash	23.00 scale	25.00 scandal	30.00 savoy	35.00 scant	40.00 scanty	50.00 scarf	55.00 sam	60.00 satan
Extra Mandrels each Code Word	\$4.00 score	4.50 scorn	5.00 scotch	5.75 scout	6.50 scream	8.00 screw	8.00 scribe	10.00 scull	12.50 sculpt	15.00 scarlet
Extra Rolls, Set of 3 Code Word	\$1.60 senate	1.75 seldom	2.00 senior	2.25 serge	2.50 serious	3.50 severe	3.50 settle	4.00 shred	4.50 scrub	5.00 sitting

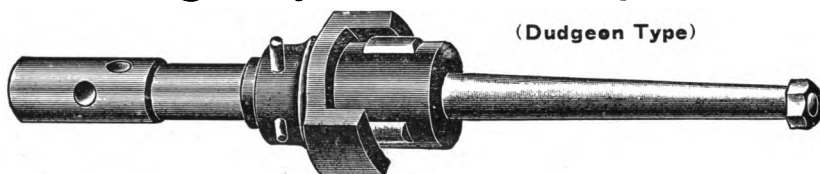
Discount on

Expanders Complete.....

Extra Mandrels.....

Extra Rolls.....

Montgomery Roller Tube Expander



(Dudgeon Type)

This Expander has a solid body, thus avoiding constant breaking of cap screws. It is made from the very best material, and with great care. The body in which the rolls work **is Hardened** which will prevent the set from cutting into same when rolling old tubes. One Expander will answer for any thickness of tube sheet.

Diameter, Inches	1	1¼	1½	1¾	1⅞	2	2½	2¼	2½	2¾
List Price, Complete Code Word	\$10.00 mad	10.00 magie	10.00 maid	10.00 main	10.00 malt	10.00 manner	12.00 manse	12.00 mantra	14.00 march	16.00 mask
Extra Mandrels each Code Word	\$2.50 mind	2.50 mink	2.50 mirth	2.50 mission	2.50 mistle	2.50 mite	3.00 mix	3.00 moan	3.50 mock	3.50 moat
Extra Rolls, Set of 3 Code Word	\$1.00 mallet	1.00 mavor	1.00 manual	1.00 maps	1.00 massive	1.00 mizzle	1.15 match	1.15 mazy	1.30 mold	1.45 maul
Diameter, Inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price, Complete Code Word	\$18.00 mat	20.00 mean	23.00 meddle	25.00 meek	30.00 melt	35.00 mess	40.00 mid	50.00 meadow	55.00 mild	60.00 mill
Extra Mandrels each Code Word	\$4.00 meekly	4.50 melon	5.00 middle	5.75 mildly	6.50 miller	8.00 minded	8.00 mars	10.00 missive	12.50 mallow	15.00 manna
Extra Rolls, Set of 3 Code Word	\$1.60 mantle	1.75 marble	2.00 mason	2.25 mate	2.50 mealy	3.50 melody	3.50 milder	4.00 model	4.50 mixture	5.00 meal

Discount on

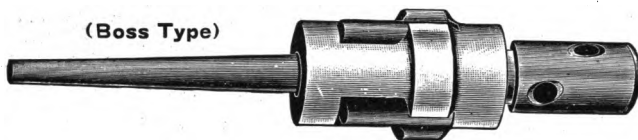
Expanders Complete.....

Extra Mandrels.....

Extra Rolls.....

Gem Roller Tube Expander

(Boss Type)



This Expander is made of the least number of parts. Machined and finished carefully out of the Best Material. The Rolls are double the necessary length, and reversible, making the life much longer than the ordinary Expander. One Expander will answer for any thickness of tube sheet.

We Carry a Large Stock and Can Ship Promptly.

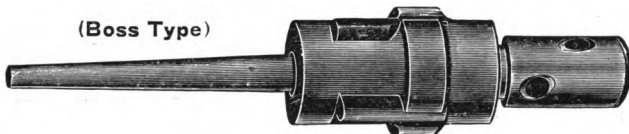
Diameter, Inches	1	1½	1¼	1¾	1½	1¾	1¾	1¾	2	2½	2¼	2¾	2½
List Price Complete	\$11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.50	13.00	15.00	15.50	16.50	17.00
Code Word	gate	gab	gage	gaily	gain	gang	gallop	game	gale	gallon	gag	gala	gland
Ex. Mandrels each	\$2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.25	2.25	2.50
Code Word	gimp	gin	gipsy	giraffe	girth	glade	gleam	glare	glass	glaze	gong	glen	glib
Extra Rolls each	\$.30	.30	.30	.30	.30	.30	.30	.30	.30	.35	.35	.40	.40
Code Word	glide	glisten	glitter	globe	gloom	glory	gloss	glove	glow	glue	glut	gobble	gold
Diameter, Inches	2½	2¾	2½	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price Complete	\$18.00	19.00	20.00	20.00	22.00	24.00	26.00	28.00	30.00	33.00	36.00	38.00	40.00
Code Word	gape	garb	gear	garret	gas	gasp	get	ghost	giant	giddy	gift	gimlet	
Ex. Mandrels each	\$2.60	2.75	3.00	3.00	3.25	3.50	3.75	4.00	5.00	6.00	7.00	7.50	8.00
Code Word	gorge	gossip	grab	grace	grain	graze	grape	graze	great	grief	grind	grip	groan
Extra Rolls each	\$.45	.60	.60	.60	.70	.70	.75	.75	.90	1.10	1.30	1.40	1.50
Code Word	goat	grocer	groove	gross	grow	guard	guide	guilt	gulph	gum	gray	grant	genral

Discount on

Expanders Complete.....
 Extra Mandrels.....
 Extra Rolls

Dayton Roller Tube Expander

(Boss Type)



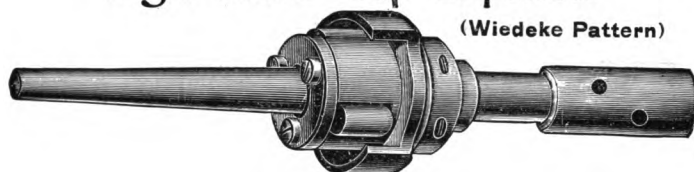
This Expander is made of the least number of parts. **Machined, Finished and Hardened** carefully out of the Best Material. The Rolls are double the necessary length, and reversible, making the life much longer than the ordinary Expander. One Expander will answer for any thickness of tube sheet. This tool, without a question, is one of the best on the market today. They are made to last. A trial order will convince you.

Diameter, Inches	1	1½	1¼	1¾	1½	1¾	1¾	1¾	2	2½	2¼	2¾	2½
List Price Complete	\$11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.50	13.00	15.00	15.50	16.50	17.00
Code Word	dab	dable	dabster	dado	daft	dagger	dahlia	daily	dainty	dairy	dais	daisy	dale
Ex. Mandrels each	\$2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.25	2.25	2.50
Code Word	dangle	dapple	dare	daring	dark	darken	darling	darn	dart	dash	door	daub	daunt
Extra Rolls each	\$.30	.80	.80	.80	.80	.80	.80	.80	.80	.85	.85	.40	.40
Code Word	dauphin	dawn	daze	dazzle	deacon	deaf	deal	dearth	debark	debase	debate	debit	debt
Diameter, Inches	2½	2¾	2½	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price Complete	\$18.00	19.00	20.00	20.00	22.00	24.00	26.00	28.00	30.00	33.00	36.00	38.00	40.00
Code Word	dally	dam	damage	damp	deer	dodo	drum	dock	dance	drop	drain	dandy	dome
Ex. Mandrels each	\$2.60	2.75	3.00	3.00	3.25	3.50	3.75	4.00	5.00	6.00	7.00	7.50	8.00
Code Word	debris	decade	deceit	deck	defy	degree	deity	delight	dell	delude	delve	demon	demure
Extra Rolls each	\$.45	.60	.60	.60	.70	.70	.75	.75	.90	1.10	1.30	1.40	1.50
Code Word	den	denial	denote	dense	dim	drug	deny	depart	depot	dot	dove	dike	dew

Discount on

Expanders Complete.....
 Extra Mandrels.....
 Extra Rolls

High Grade Cap Expander



This Expander is made of a special material, the roller frame is made from the special brand (Corona steel), and tempered. The frame is so constructed that the rolls can not fall to the inside or outside when the mandrel is removed. The mandrel and rolls are made of the best tool steel and tempered with the greatest care. This is one of our highest priced expanders, and we guarantee material and workmanship the best.

Diameter, Inches	1¾	1½	2	2½	2½	2½	2¾	3	3¼	3½
List Price, Complete Code Word	\$10.00 cab	10.00 cabin	10.00 cable	12.00 caddy	12.00 cadet	14.00 cafe	16.00 cage	18.00 cam	20.00 cake	23.00 canary
Extra Mandrels each Code Word	\$2.50 cane	2.50 canoe	2.50 canopy	3.00 canteen	3.00 cantor	3.50 caper	3.50 capon	4.00 captive	4.50 car	5.00 carat
Extra Rolls, Set of 3 Code Word	\$1.00 caravan	1.00 carbon	1.00 card	1.15 cardiac	1.15 career	1.30 caress	1.45 cargo	1.60 carnage	1.75 carnal	2.00 carol
Diameter, Inches	3¾	4	4¼	4½	5	5½	6	6½	7	8
List Price, Complete Code Word	\$25.00 carom	30.00 carp	35.00 carrot	40.00 cartel	50.00 cartoon	55.00 carve	60.00 cascade	70.00 casino	80.00 cast	90.00 caster
Extra Mandrels each Code Word	\$5.75 castle	6.50 castrate	8.00 casual	8.00 catch	10.00 catawba	12.50 catarrh	15.00 cataract	20.00 cater	25.00 caucus	30.00 caul
Extra Rolls, Set of 3 Code Word	\$2.25 cause	2.50 caustic	3.50 caution	3.50 cavalier	4.00 cave	4.50 caveat	5.00 cavern	10.00 cavity	12.50 caw	15.00 cayuse

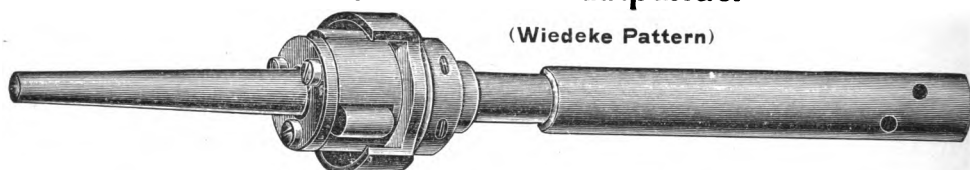
Discount on

Expanders Complete.....

Extra Mandrels

Extra Rolls.....

Water Tube Boiler Expander



This Expander is made of a special material, the roller frame is made from the special brand (Corona steel), and tempered. The frame is so constructed that the rolls can not fall to the inside or outside when the mandrel is removed, a necessity in rolling tubes in water tube boilers. The mandrel and rolls are made of the best tool steel and tempered with the greatest care. This is one of the highest priced expanders, and we guarantee material and workmanship the best. **This Expander is made especially for water tube boilers, the mandrels are all 36 inches long, and the rolls are all 2 inches long, especially adapted for this purpose.**

Diameter, Inches	1¾	1½	2	2½	2½	2½	2¾	3	3¼	3½
List Price, Complete Code Word	\$12.00 cease	12.00 cecity	12.00 cedar	14.00 cede	14.00 cedilla	16.00 celery	14.00 censor	20.00 census	22.00 chafe	25.00 charnel
Extra Mandrels each Code Word	\$5.00 chary	5.00 chat	5.00 chin	6.00 chip	6.00 chord	7.00 chub	7.00 cinder	8.00 civic	9.00 clam	10.00 claw
Extra Rolls, Set of 3 Code Word	\$2.00 clew	2.00 cliff	2.00 cling	2.30 clip	2.30 clod	2.60 clover	2.90 clow	3.20 cota	3.50 cod	4.00 coil
Diameter, Inches	3¾	4	4¼	4½	5	5½	6	6½	7	8
List Price, Complete Code Word	\$27.00 colon	32.00 colt	37.00 comb	42.00 comet	52.00 condor	57.00 cone	65.00 confide	75.00 conical	85.00 consort	95.00 consul
Extra Mandrels each Code Word	\$11.50 contact	13.00 contest	16.00 convert	16.00 convey	18.00 coop	20.00 cope	22.00 core	24.00 corn	28.00 cossack	32.00 cot
Extra Rolls, Set of 3 Code Word	\$4.00 couch	4.00 cove	6.00 crab	6.00 craft	7.00 cram	8.00 crass	8.00 crisp	12.00 crosis	15.00 crust	18.00 curl

Discount on

Expanders Complete.....

Extra Mandrels

Extra Rolls.....

Solid Tube Expander Mandrels



These Mandrels are made of the very best tool steel, carefully tempered. They are made 36 inches long.

Diameter, Inches	1¾	1⅝	2	2⅛	2¼	2½	2¾	3	3¼	3½	3¾	4	4½
List Price, each	\$5.00	6.00	6.00	6.00	6.00	7.00	7.00	8.00	9.00	10.00	11.50	13.00	16.00
Code Word	jail	jar	jam	jabber	jackal	jess	jackdaw	jack	jerk	joes	jads	jav	jacobin

Discount.....

Single Jointed Tube Expander Mandrels



These Mandrels are made of the very best steel, and tempered. They are made 31½ inches long.

Diameter, Inches	1¾	1⅝	2	2⅛	2¼	2½	2¾	3	3¼	3½	3¾	4	4½
List Price, each	\$10.00	10.00	10.00	12.00	12.00	14.00	15.00	15.00	16.00	17.00	18.00	18.00	21.00
Code Word	jaunt	jaw	joy	jasper	jet	jenny	jelly	jog	jetty	jean	jacobite	jot	jangle

Discount.....

Double Jointed Tube Expander Mandrels



These mandrels are made of the very best steel, and tempered. They are made 39 inches long.

Diameter, Inches	1¾	1⅝	2	2⅛	2¼	2½	2¾	3	3¼	3½	3¾	4	4½
List Price, each	\$12.00	12.00	12.00	14.00	14.00	16.00	17.00	17.00	18.00	19.00	20.00	20.00	24.00
Code Word	jigger	jilt	jib	jump	jockey	joke	jolly	jug	junta	jupiter	jove	juror	judge

Discount.....

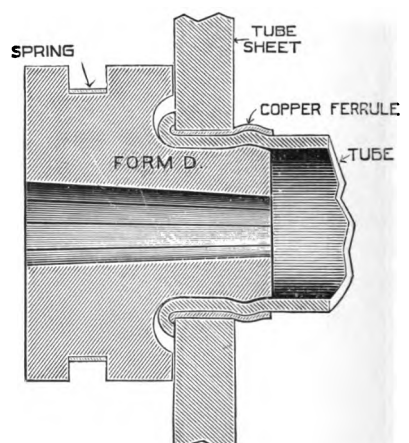
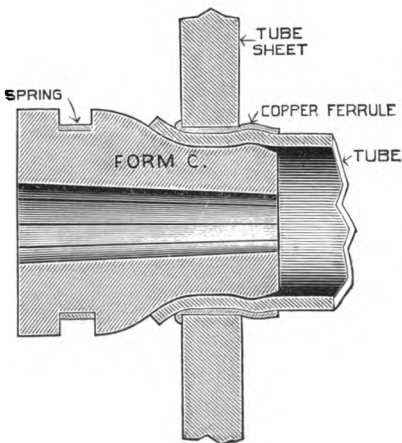
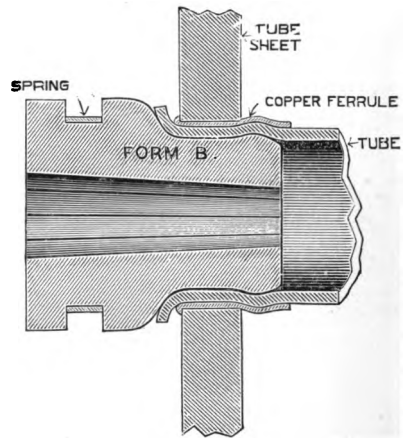
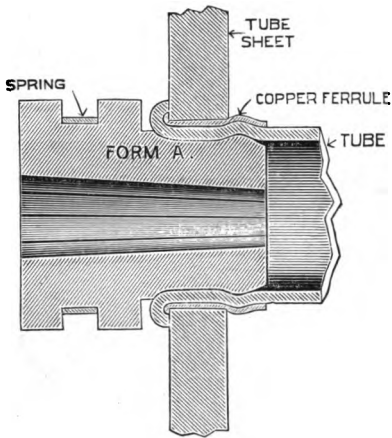
Improved Sectional Beading Tube Expanders

For Locomotive and Marine Boilers

These expanders are manufactured in four different forms as illustrated below.

All orders are filled with Form A, Spring Steel Bands and standard size of tube sheet (which is $\frac{1}{8}$ -in.) unless instructed otherwise.

These tube expanders are made of the best tool steel, and give high service.

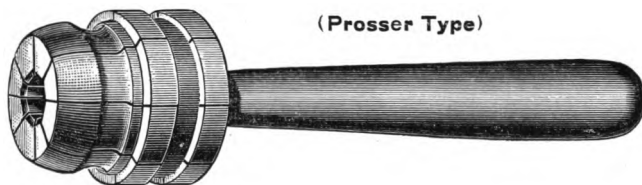


Code Word for Plates on Sectional Type Expanders

$\frac{1}{4}$ inch thickness of tube sheet, Code Word, Tab							11-16 inch thickness of tube sheet, Code Word, Teal						
5-16	"	"	"	"	"	"	Tabor	$\frac{3}{4}$	"	"	"	"	"
$\frac{3}{8}$	"	"	"	"	"	"	Taint	13-16	"	"	"	"	Tenur
7-16	"	"	"	"	"	"	Talon	$\frac{7}{8}$	"	"	"	"	Theme
$\frac{1}{2}$	"	"	"	"	"	"	Tan	15-16	"	"	"	"	Thong
9-16	"	"	"	"	"	"	Tapir	1	"	"	"	"	Thrift
$\frac{5}{8}$	"	"	"	"	"	"	Toga						Tare

Sectional Spring Tube Expander

Form A



Always state thickness of tube sheet when ordering Sectional Spring Tube Expanders.

MADE OF THE VERY BEST TOOL STEEL

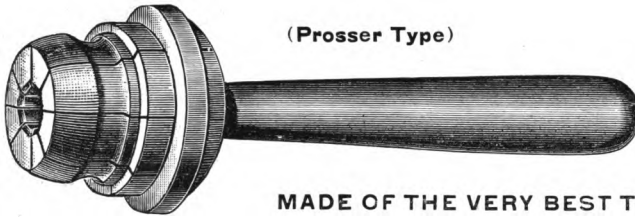
Diameter, Inches	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$
List Price, Complete	\$11.00	11.00	11.00	11.00	11.00	12.00	13.00	13.00	15.00	18.00
Code Word	paca	pace	pack	pad	paddle	ply	pail	pain	palace	pall
Extra Pins, Each	\$1.75	1.75	1.75	1.75	1.75	2.00	2.25	2.25	2.50	2.75
Code Word	palm	palter	pamper	pan	panel	panic	pansy	papaw	par	parch
Extra Springs, Each	\$.75	.75	.75	.75	.75	.75	.90	.90	.90	1.00
Code Word	pardon	parent	park	parley	parlor	parole	parse	passion	paste	pat
Diameter, Inches	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6
List Price, Complete	\$22.00	26.00	30.00	33.00	33.00	35.00	37.00	42.00	52.00	60.00
Code Word	path	patient	patron	patter	panse	pavan	paw	pea	peach	peak
Extra Pins, Each	\$3.00	3.25	3.50	4.00	4.00	4.50	4.50	8.00	10.00	12.00
Code Word	pearl	pebble	pecan	peck	pedal	peer	peg	pell	pensile	pepper
Extra Springs, Each	\$1.00	1.20	1.20	1.20	1.20	2.00	2.00	3.00	3.50	4.00
Code Word	pepsin	perch	pet	perk	pill	pine	plot	page	poke	pure

Discount on

{ Expanders Complete.....
 { Extra Pins.....
 { Extra Springs.....

Sectional Rubber Band Tube Expander

Form A



(Prosser Type)

Always state thickness of tube sheet when ordering Sectional Tube Expanders with Rubber Bands.

MADE OF THE VERY BEST TOOL STEEL

Diameter, inches	1	1¼	1½	1¾	1⅞	2	2⅞	2¼	2½	2¾
List Price, complete	\$11.00	11.00	11.00	11.00	11.00	12.00	13.00	13.00	15.00	18.00
Code Word	rabbit	race	rack	raft	rage	rain	rake	ram	ramp	ranch
Extra Pins, each	\$1.75	1.75	1.75	1.75	1.75	2.00	2.25	2.25	2.50	2.75
Code Word	rand	rap	rare	rash	rattle	raven	raw	ray	rear	real
Ex. Rubber bands, each	\$.75	.75	.75	.75	.75	.75	.90	.90	.90	1.00
Code Word	realm	rebel	recruit	rebuff	rebus	red	recede	recent	recess	regal
Diameter, inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price, Complete	\$22.00	26.00	30.00	33.00	33.00	35.00	37.00	42.00	52.00	60.00
Code Word	region	reef	reign	relax	relish	remote	remold	remise	rend	repute
Extra Pins, each	\$ 3.00	3.25	3.50	4.00	4.00	4.50	4.50	8.00	10.00	12.00
Code Word	rescue	reside	resign	resort	resume	revel	revile	ride	rife	ridge
Ex. Rubber bands, each	\$ 1.00	1.20	1.20	1.20	1.20	2.00	2.00	3.00	3.50	4.00
Code Word	rhyme	rib	riot	road	root	rock	roe	rude	rule	rye

Discount on

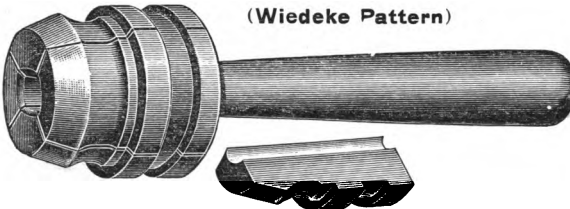
Expanders Complete.....

Extra Pins.....

Extra Rubber Bands.....

Dayton Improved Sectional Spring Tube Expander

Form A



(Wiedeke Pattern)

Always state thickness of tube sheet when ordering the Dayton Improved Sectional Spring Tube Expanders.

This expander is made in four sections only.

Each section being much larger, stronger and so constructed that when expanding it is only necessary to give it one turn, to make a perfect round bead, which can not be done with an expander having more sections.

IT IS MADE OF THE VERY BEST TOOL STEEL

Diameter, inches	1	1¼	1½	1¾	1⅞	2	2⅞	2¼	2½	2¾
List Price, complete	\$11.00	11.00	11.00	11.00	11.00	12.00	13.00	13.00	15.00	18.00
Code Word	label	lack	lace	lad	ladder	ladle	lagoon	laird	lake	lamb
Extra Pins, each	\$ 1.75	1.75	1.75	1.75	1.75	2.00	2.25	2.25	2.50	2.75
Code Word	lame	lard	lark	larrup	larva	lass	latch	latten	launch	laurel
Extra Springs, each	\$.75	.75	.75	.75	.75	.75	.90	.90	.90	1.00
Code Word	lava	lavish	law	lawn	laxity	leach	lead	leaf	lean	lector
Diameter, inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List price, complete	\$22.00	26.00	30.00	33.00	33.00	35.00	37.00	42.00	52.00	60.00
Code Word	ledge	leg	legal	legion	lemon	leper	lettuce	levee	levy	libel
Extra Pins, each	\$ 3.00	3.25	3.50	4.00	4.00	4.50	4.50	8.00	10.00	12.00
Code Word	liberty	life	light	lily	lilac	limb	liter	load	liver	lobbys
Extra Springs, each	\$ 1.00	1.20	1.20	1.20	1.20	2.00	2.00	3.00	3.50	4.00
Code Word	lock	locust	lodge	loft	loins	lord	lotto	lotus	luck	lynx

Discount on

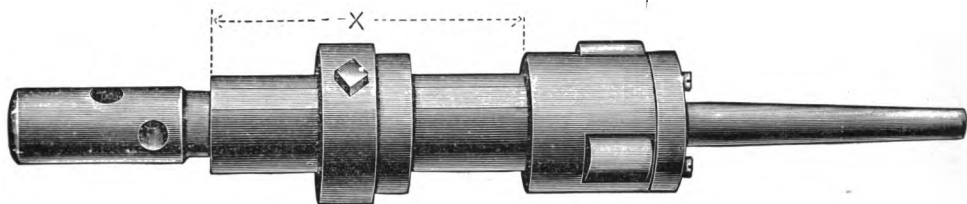
Expanders Complete.....

Extra Pins.....

Extra Springs.....

Arch Roller Tube Expander

(Wiedeke Patent)



This expander was designed especially to roll arch tubes in Locomotive Boilers, by means of the adjustable collar, it matters not how far the inside and outside sheets are apart, to make a tight job. The roller frame is made of steel and hardened. The rolls and mandrel are made of the best tool steel carefully tempered. All orders are filled with six inch long shank (at x) and mandrel for hand use, unless instructed otherwise. If desired we can furnish them for both Hand and Air power, any length shank. (At x).

Diameter	Inches	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4
List Price, Complete		\$12.00	12.00	12.00	14.00	14.00	16.00	18.00	20.00	22.00	25.00	27.00	32.00
Code Word		nacre	nabob	nab	nadir	nail	naive	nankeen	nap	napkin	nappy	narcotic	nator
Extra Mandrels Each		\$5.00	5.00	5.00	6.00	6.00	7.00	7.00	8.00	9.00	10.00	11.50	13.00
Code Word		nard	narrate	narrow	nasal	nasty	natant	national	native	natty	nature	nansee	navy
Extra Rolls Set of 3		\$2.00	2.00	2.00	2.30	2.30	2.60	2.90	3.20	3.50	4.00	4.00	4.00
Code Word		naval	nave	neap	neb	nebula	neck	nectar	needle	neer	negus	neigh	neptun

Discount on	Expanders Complete.....
	Extra Mandrels.....
	Extra Rolls.....

Special Roller Tube Expander



This expander is made especially for Automobile boilers, and Copperage Mfgs. using copper tubes.

We fill all orders of these expanders with $\frac{3}{8}$ -inch square shank mandrels unless instructed otherwise.

The diameter given is for outside diameter of tubes, not heavier than 32 guage.

Diameter, Inches	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
List Price, Complete	\$12.00	12.00	13.00	14.00	14.00
Code Word	nerve	nest	net	nettle	nog
Extra Mandrels, each	\$5.00	5.00	5.50	6.00	6.00
Code Word	nib	nibble	nick	niece	nill
Extra Rolls, Set of 3	\$2.00	2.00	2.25	2.50	2.75
Code Word	nit	nipple	niter	noble	nerve

Discount on	Expanders Complete.....
	Extra Mandrels.....
	Extra Rolls.....

Special Sectional Tube Expander



This expander is made especially for Automobile boilers, and Copperage Mfgs. using copper tubes.

They are made of the finest tool steel, and give high service.

For thickness of tube sheet use same Code Words as on the (Prosser Type).

We fill all orders with form A.

The diameter given is for outside diameter of tubes, not heavier than 32 guage.

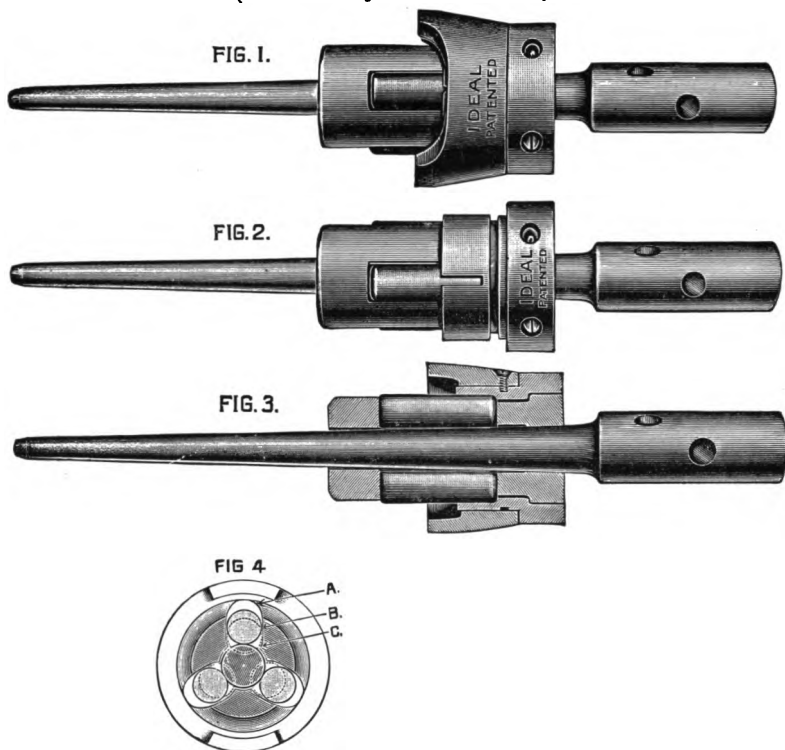
Diameter, Inches	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
List Price, Complete	\$14.00	14.00	15.00	15.00	15.00
Code Word	node	nook	novel	novice	noun
Extra Pins, Each	\$4.00	4.00	4.50	5.00	5.00
Code Word	noose	norse	notch	notion	nude
Extra Springs, Each	\$.75	.75	.75	.75	.75
Code Word	null	nozzle	nudge	nurse	noodle

Discount on	Expanders Complete.....
	Extra Pins.....
	Extra Springs.....

Ideal Roller Tube Expander

(Patented, Trade Mark Registered)

(Worked by Hand Power)



Preface

In presenting the Ideal Tube Expander to the trade, we claim the latest scientific and mechanical improvements in the tube expanders. The inventor is a man of long experience in the manufacture of substantial tools needed for the manufacture, repair and maintenance of steam boilers, and has spared neither time nor expense to make a practical expander, simple in construction, embodying perfect designs and principles, with efficiency and economy combined.

Description

This expander is the most simple in construction and much quicker in operation than any other expander on the market today. The roller frame, guard and cap are made of a special material. The mandrel and rolls are made of the very best tool steel, tempered with the greatest care, which prolongs the life of this expander and it will outwear four others. The advantages of this expander are well worth considering. (See next page.)

Ideal Roller Tube Expander

(Patented, Trade Mark Registered)

(Worked by Hand Power)

The Advantages of this Expander Are Well Worth Considering

- 1st. The roller frame is so constructed that the **Rolls cannot drop either to the inside or outside if the mandrel is removed**—this is very important. See Fig. 4, (end view) showing shoulders, (A and C) holding in place the roll (B).
- 2nd. There are no cap screws to work loose.
- 3rd. The rolls are double the necessary length of the ordinary expanders, and are reversible, making the life of the tool much longer.
- 4th. The rolls can be replaced instantly. All that is necessary is to remove the split cotter you see in Fig. 1, take out the cap in the rear (see sectional view, Fig. 3), and the rolls will fall out of the rear.
- 5th. You can remove the guard to work close to the boiler shell, or rivet line (see Fig. 2), which is necessary in many locomotive and marine boilers.

Diameter, Inches	1	1¼	1½	1¾	1⅞	2	2⅞	2¼	2½	2¾
List Price, Complete	\$10.00	10.00	10.00	12.00	12.00	12.00	13.00	13.00	14.00	16.00
Code Word	habit	hack	hag	hall	ham	harp	harpoon	hash	haft	hackle
Extra Mandrels each	\$ 2.50	2.50	2.50	2.50	2.50	2.50	3.00	3.00	3.50	3.50
Code Word	hades	hallow	hamper	halt	hank	harem	harass	harelip	harm	harrier
Extra Rolls, each	\$.30	.30	.30	.30	.30	.30	.35	.35	.40	.60
Code Word	halberd	hand	handily	hanker	hard	hark	hapless	haricot	harvest	hasp
Diameter, Inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price, Complete	\$18.00	19.00	20.00	21.00	22.00	26.00	30.00	40.00	45.00	50.00
Code Word	hail	hare	hamlet	halter	harbor	haggle	heart	hemp	herd	hoop
Extra Mandrels each	\$4.00	4.50	5.00	5.75	6.50	8.00	8.00	10.00	12.50	15.00
Code Word	hat	hatter	haven	haunt	hazel	hay	heel	hilt	hone	hop
Extra Rolls, each	\$.60	.70	.70	.75	.75	.90	1.10	1.30	1.40	1.50
Code Word	hatch	haul	hawk	havoc	helm	head	hedge	hub	haste	hulk

Discount on

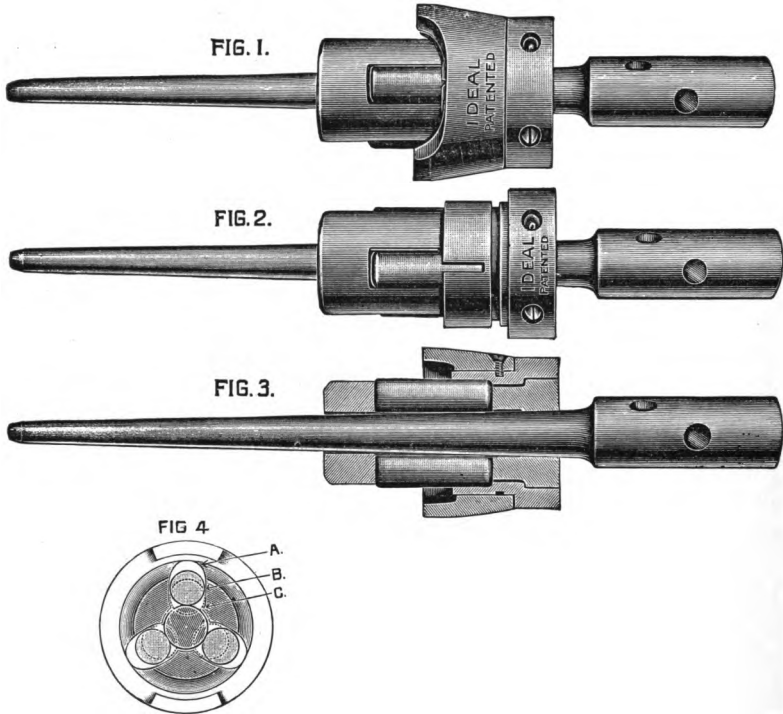
{	Expanders Complete
	Extra Mandrels
	Extra Rolls

Special Ideal Roller Tube Expander

(Patented, Trade Mark Registered)

For Locomotive and Marine Service

(Worked by Hand Power)



Preface

In presenting the Ideal Tube Expander to the trade, we claim the latest scientific and mechanical improvements in the tube expanders. The inventor is a man of long experience in the manufacture of substantial tools needed for the manufacture, repair and maintenance of steam boilers, and has spared neither time nor expense to make a practical expander, simple in construction, embodying perfect designs and principles, with efficiency and economy combined.

Description

This expander is the most simple in construction and much quicker in operation than any other **High Grade Expander** on the market today. The roller frame, guard and cap are made of a **Special Steel and Tempered**. The mandrel and rolls are made of the very best tool steel, tempered with the greatest care, which prolongs the life of this expander and it will outwear four others. The advantages of this expander are well worth considering. (See next page.)

Special Ideal Self-Feed Roller Tube Expander

(Patented, Trade Mark Registered)

For Locomotive and Marine Service

(Worked by Hand and Air Power)

The Advantages of this Expander Are Well Worth Considering

- 1st. The roller frame is so constructed that the **Rolls cannot drop either to the inside or outside if the mandrel is removed**—this is very important. See Fig. 4, (end view) showing shoulders, (A and C) holding in place the roll (B).
- 2nd. There are no cap screws to work loose.
- 3rd. The rolls are double the necessary length of the ordinary expanders, and are reversible, making the life of the tool much longer.
- 4th. The rolls can be replaced instantly. All that is necessary is to remove the split cotter you see in Fig. 1, take out the cap in the rear (see sectional view, Fig. 8), and the rolls will fall out of the rear.
- 5th. You can remove the guard to work close to the boiler shell, or rivet line (see Fig. 2), which is necessary in many locomotive and marine boilers.

Self Feed

The rolls are set at a proper angle, and as soon as the mandrel is forced against them, it immediately takes hold and gradually feeds its way in, insuring a steady and even expansion of the tube, and dispensing with the hammering of the mandrel.

These expanders are furnished with Standard square shank mandrels, and have a right hand feed.

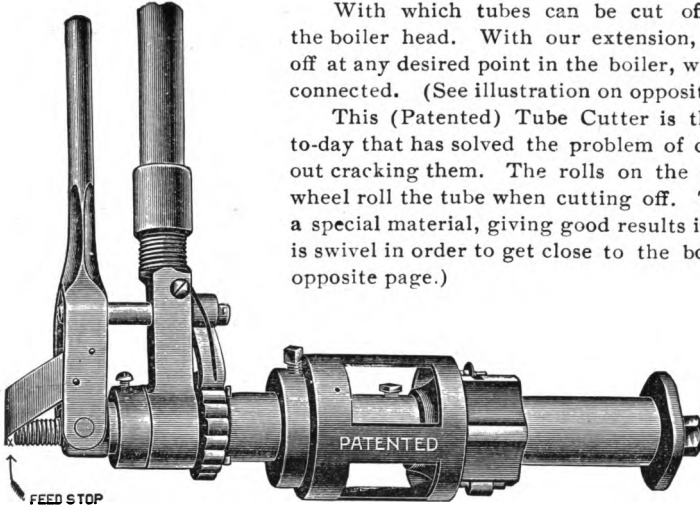
We furnish as standard, $\frac{3}{4}$ -inch square shank mandrels for sizes, 1 inch to $2\frac{1}{2}$ inches, and $\frac{7}{8}$ inch square shank mandrels for sizes, $2\frac{3}{4}$ inches to 4 inches, unless otherwise ordered.

Diameter, Inches	1	1¼	1½	1¾	1⅞	2	2⅞	2¼	2½	2¾
List Price, Complete	\$12.00	12.00	12.00	16.00	16.00	16.00	18.00	18.00	20.00	23.00
Code Word	eager	earth	earl	eden	ear	eagle	echo	ease	east	eat
Extra Mandrels each	\$2.50	2.50	2.50	2.50	2.50	2.50	3.00	3.00	3.50	3.50
Code Word	ebony	ecarte	eddy	era	elder	ebb	editor	egg	eject	elbow
Extra Rolls, each	\$.80	.30	.30	.30	.30	.30	.35	.35	.40	.60
Code Word	edge	edict	edile	ergot	elm	elk	eel	eider	eke	elect
Diameter, Inches	3	3¼	3½	3¾	4	4¼	4½	5	5½	6
List Price, Complete	\$26.00	29.00	32.00	35.00	38.00	45.00	50.00	60.00	65.00	70.00
Code Word	eye	eyelet	empress	easter	empire	enact	encore	en live	endow	enfran
Extra Mandrels each	\$4.00	4.50	5.00	5.75	6.50	8.00	8.00	10.00	12.50	15.00
Code Word	envy	elope	emboss	emit	etch	enjoy	ensure	entail	entice	entitle
Extra Rolls, each	\$.60	.70	.70	.75	.75	.90	1.10	1.30	1.40	1.50
Code Word	epic	elude	emery	empale	essav	ermine	escort	excel	excess	exile

Discount on	{	Expanders Complete.....	
		Extra Mandrels	
		Extra Rolls.....	

Wiedeke Self-Feed Tube Cutter

(Patented)



With which tubes can be cut off either inside or outside of the boiler head. With our extension, connected tubes can be cut off at any desired point in the boiler, with proper length extension connected. (See illustration on opposite page.)

This (Patented) Tube Cutter is the only one on the market to-day that has solved the problem of cutting off steel tubes without cracking them. The rolls on the opposite side of the cutter wheel roll the tube when cutting off. The entire tool is made of a special material, giving good results in wearing. The feed handle is swivel in order to get close to the boiler shell. (See Fig. 2 on opposite page.)

This Tool will pay for itself just to cut out old tubes in a 60 inch boiler.

For Operating

It is simply constructed and needs no explanation other than the following:

When cutting off tubes, put the feed handle on the stud parallel with ratchet handle, then keep your hands off the feed handle, as it feeds itself automatically while you are turning the ratchet handle, from left to right, in cutting off the tube.

All tubes are generally cut off before the feed rod touches the angle iron on the feed handle. (See X feed stop.) Stop cutting when feed rod touches angle iron, as all tubes are cut off then. Each tube cutter furnished with this stop.

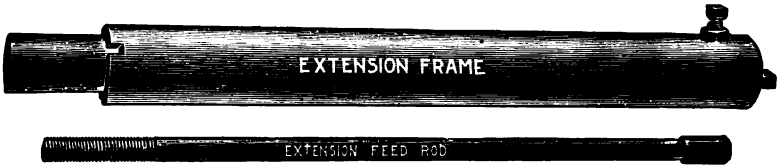
For Replacing Parts

In case you wish to take a tool apart, or take out the carriage that holds the cutter wheel or bottom roller, loosen the set screw, which you see on the cut, looking through the guard, as this will loosen the carriages from the wedge, and when replaced, be careful to see that both carriages work in the slides on the wedge, and you can use the tool for months (if well oiled) without any repairs.

Diameter,	Inches	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	5	5 1/2	6
List Price,	Each	\$14.00	14.00	14.00	16.00	20.00	20.00	22.00	22.00	22.00	30.00	30.00	32.00	32.00	32.00
Code Word		wail	wad	wasp	wick	war	weed	wax	wise	web	wipe	woe	wolf	wood	wizard

Discount.....

Extension for Above Tube Cutter



Number	Fits the following size Tube Cutters	Extension Frame and Feed Rod, Complete	Length of extension	Code Word
A-1	2 2 1/4 2 1/2 and 2 3/4	\$3 80	19 inches	yak
A-2	" " " " " "	8 00	38 "	yacht
B-3	3 3 1/4 3 1/2 3 3/4 4 and 4 1/4	4 50	19 "	yam
B-4	" " " " " "	10 00	38 "	yard
B-5	" " " " " "	15 00	6 feet	yern
B-6	" " " " " "	18 00	8 "	yoke
C-7	4 1/2 5 5 1/2 and 6	7 00	19 inches	yelp
C-8	" " " " " "	15 00	88 "	yawl

Discount.....

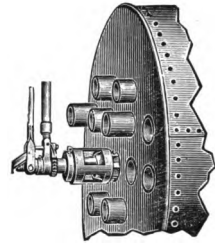
Wiedeke Self-Feed Tube Cutter

(Patented)

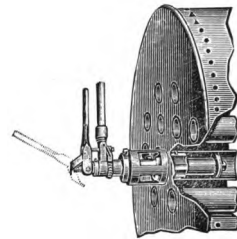
Fig. 1

This cut illustrates our Tube Cutter drawn back out of the tube a little, showing the tube just cut off. It cuts off all tubes the same distance from the head, and can be set any distance, no matter if the tubes project out from one-half to four inches from the boiler head.

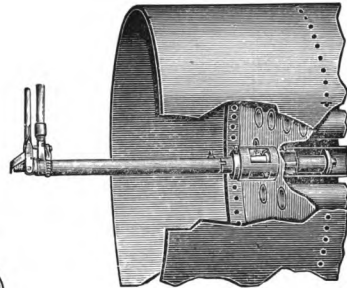
It cuts them off with a bevel, ready for beading, and rolls the tube at the same time, which is a great advantage.

**Fig. 2**

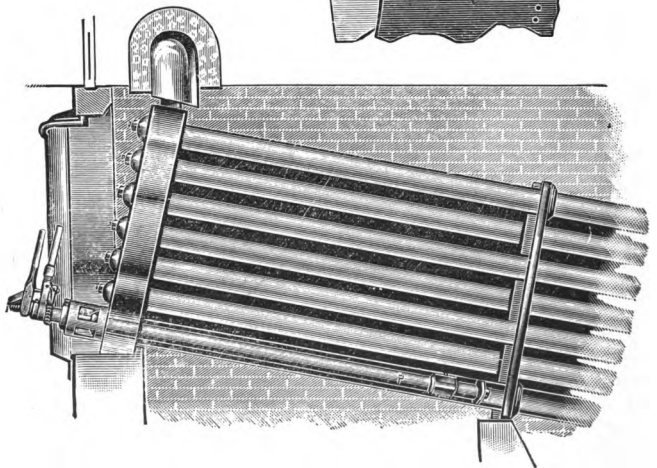
This cut illustrates our Tube Cutter cutting out old tubes just inside of the boiler head, and can be set at any distance. All the change necessary to be made from cutting off tubes from outside to cutting off on the inside of the head, is to move the cap back; this can be done in half a minute.

**Fig. 3**

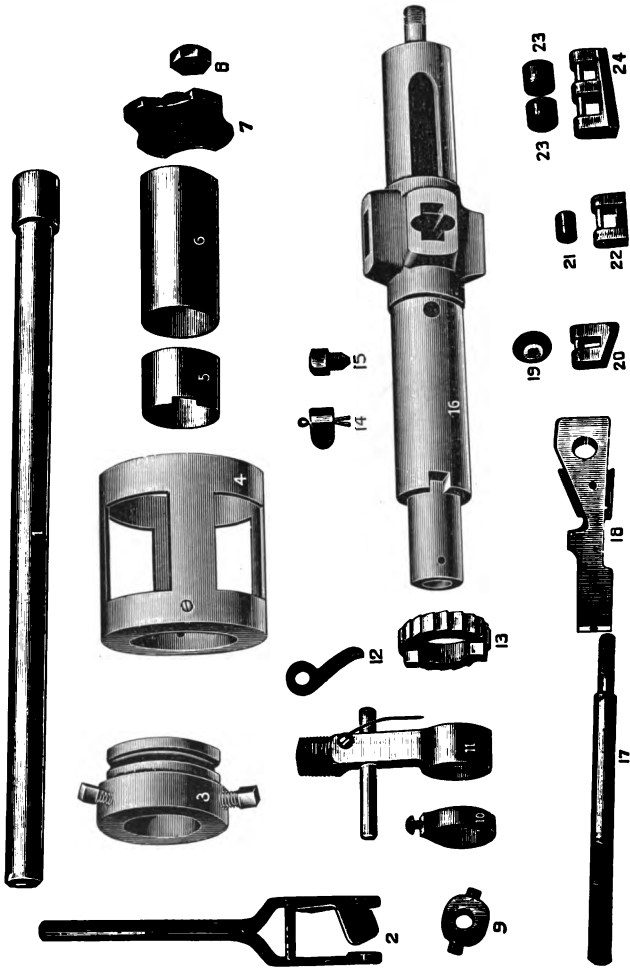
This cut illustrates our extension connected with our Tube Cutter reaching through a smoke box, and with this combination a man can stand straight outside, to cut off tubes either inside or outside of the boiler head. In this position a man can do four times as much as if sitting crouched up inside of a smoke box, chipping off tubes, and many more advantages which we can explain if desired.

**Fig. 4**

This cut illustrates our Tube Cutter, showing that tubes can be cut off at any point, in the Ordinary, or Water Tube and Marine Boilers.



Extra Parts for Wiedeke Self-Feed Tube Cutter



When ordering extra parts for the Wiedeke Self-Feed Tube Cutter, always state number of piece and for what size Tube Cutter wanted.

If extra parts are ordered by Code Words, it is not necessary to state number, or for what size Tube Cutter wanted.

LIST PRICE LAKE PARIS FOR WIEDEKE SELF-FEED TUBE CUTTER

Diameter	Inches	No. of Pieces	2	2 1/4	2 1/2	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	5	5 1/2	6
Ratchet Handle Code Word	1		\$.40	.40	.40	.50	.50	.50	.50	.50	.80	.80	.80	.80	.80
Feed Handle Code Word	2		\$.50	.50	.50	.50	.50	.50	.50	.50	.60	.60	.60	.60	.60
Guard Sleeve Code Word	3		\$1.10	1.10	1.10	1.20	1.20	1.30	1.30	1.30	2.00	2.00	2.00	2.00	2.00
Guard Code Word	4		\$1.10	1.10	1.10	1.30	1.30	1.40	1.40	1.40	2.80	2.80	3.20	3.20	3.20
Short Bushing Code Word	5		\$.50	.50	.50	.50	.50	.50	.50	.50	.60	.60	.60	.60	.60
Long Bushing Code Word	6		\$1.00	1.00	1.00	.50	.50	.50	.50	.50	.60	.60	.60	.60	.60
Centering Guide Ring Code Word	7		\$.10	.10	.10	.40	.40	.40	.40	.40	.60	.60	.70	.70	.70
Nut Code Word	8		\$.10	.10	.10	.10	.10	.10	.10	.10	.20	.20	.20	.20	.20
Feed Nut Code Word	9		\$.40	.40	.40	.40	.40	.40	.40	.40	.60	.60	.60	.60	.60
Ratchet Collar Code Word	10		\$.20	.20	.20	.30	.30	.30	.30	.30	.35	.35	.35	.35	.35
Ratchet Frame Code Word	11		\$1.50	1.50	1.50	1.60	1.60	1.60	1.60	1.60	2.00	2.00	2.00	2.00	2.00
Ratchet Pawl Code Word	12		\$.20	.20	.20	.20	.20	.20	.20	.20	.30	.30	.30	.30	.30
Ratchet Wheel Code Word	13		\$.80	.80	.80	.80	.80	.80	.80	.80	1.00	1.00	1.00	1.00	1.00
Split Cutter and Stop Code Word	14		\$.20	.20	.20	.20	.20	.20	.20	.20	.30	.30	.30	.30	.30
Stop Bolt Code Word	15		\$.10	.10	.10	.10	.10	.10	.10	.10	.15	.15	.15	.15	.15
Frame Code Word	16		\$5.80	5.80	5.80	11.00	11.00	11.00	11.00	11.00	15.00	15.00	15.00	15.00	15.00
Feed Rod Code Word	17		\$.75	.75	.75	.75	.75	.75	.75	.75	.90	.90	.90	.90	.90
Feed Wedge Code Word	18		\$1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	2.00	2.00	2.00	2.00	2.00
Gutter Wheel Code Word	19		\$.25	.25	.25	.25	.25	.25	.25	.25	.40	.40	.40	.40	.40
Gutter Carrier Code Word	20		\$.80	.80	.80	.80	.80	.80	.80	.80	1.30	1.30	1.30	1.30	1.30
Roll for single roller carrier Code Word	21		\$.25	.25	.25	.25	.25	.25	.25	.25	.35	.35	.35	.35	.35
Single Roller Carrier Code Word	22		\$.80	.80	.80	.80	.80	.80	.80	.80	1.00	1.00	1.00	1.00	1.00
Rolls for double roller carrier Code Word	23		\$.25	.25	.25	.25	.25	.25	.25	.25	.50	.50	.50	.50	.50
Double Roller Carrier Code Word	24		\$ 1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	2.60	2.60	2.60	2.60	2.60

Discount.....

Standard Navy Special Self-Feed Tube Cutter

(Patented)

This (Patent) Tube Cutter is the only one on the market to-day that has solved the problem of cutting off Steel Tubes without cracking them.

The rolls on the opposite side of the cutter wheel, roll the tube when cutting off.

The entire tool is made of the best Steel, all small wearing parts made from solid bar tool steel.

For Operating

It is simply constructed and needs no explanation other than the following :

When cutting off tubes, put the feed handle on the stud parallel with ratchet handle, then keep your hands off the feed handle, as it **feeds itself** automatically while you are turning the ratchet handle, from left to right, in cutting off the tube.

All tubes are generally cut off **before** the feed rod touches the angle iron on the feed handle. (See X feed stop.)

Stop cutting when feed rod touches angle iron, as all tubes are cut off then. Each tube cutter furnished with this stop.

For Replacing Parts

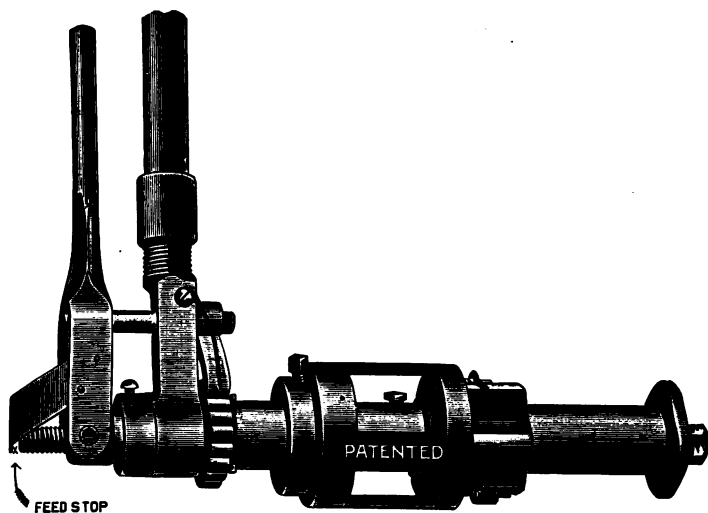
In case you wish to take a tool apart, or take out the carriage that holds the cutter wheel or bottom roller, loosen the set, screw which you see on the cut (on opposite page) looking through the guard, as this will loosen the carriages from the wedge, and when replaced, be careful to see that both carriages work in the slides on the wedge, and you can use the tool for months (if well oiled) without any repairs. For list price see next page.

Standard Navy Special Self-Feed Tube Cutter

(Patented)

With which tubes can be cut off either inside or outside of the boiler head.

With our extension, connected tubes can be cut off at any desired point in the boiler, with proper length extension connected. The feed handle is swivel in order to get close to the boiler shell. (See illustrations page 25.)



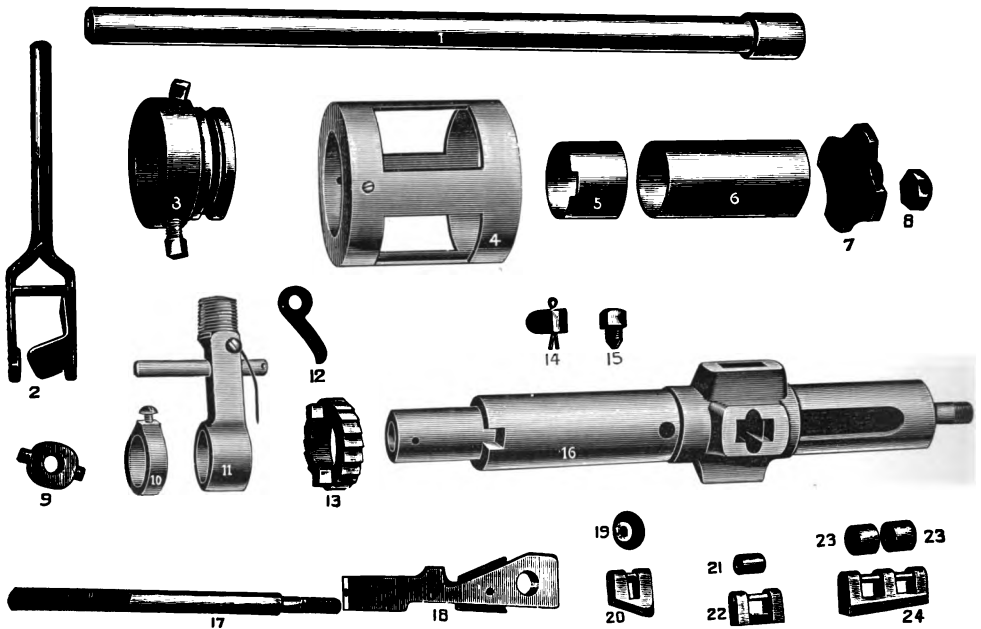
LIST PRICE

Diameter, Inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4
List Price, Each	\$25.00	25.00	25.00	35.00	40.00	40.00	45.00	45.00	45.00
Code Word	Kaiser	Katy	Kingdom	Kernel	Kavass	Khan	Khediye	Koran	King

Extra Parts For Standard Navy Special Self-Feed Tube Cutter

(Patented)

All parts made of the best steel, all small wearing parts made from solid bar tool steel.



When ordering extra parts for the Standard Navy Special Self-Feed Tube Cutter, always state number of piece, and for what size tube cutter wanted.

If extra parts are ordered by code words, it is not necessary to state number, or for what size tube cutter wanted.

Extra Parts For

Standard Navy Special Self-Feed Tube Cutter

(Patented)

All parts made of the best steel, all small wearing parts made from solid bar tool steel.

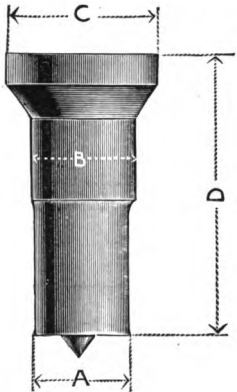
LIST PRICE

Diameter	Inches	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4
Name of Piece	No. of Pieces									
Ratchet Handle Code Word	1	\$.80 babe	.80 babble	.80 baboon	.80 baccara	1.00 bacchus	1.00 backer	1.00 bacon	1.00 bad	1.00 badge
Feed Handle Code Word	2	\$1.00 badly	1.00 baffle	1.00 bag	1.00 baggage	1.00 bagman	1.00 bagnio	1.00 bail	1.00 bailiff	1.00 bairn
Guard Sleeve Code Word	3	\$2.20 bait	2.20 baize	2.20 bake	2.20 balcony	2.40 bald	2.40 balk	2.60 ballad	2.60 balloon	2.60 ballast
Guard Code Word	4	\$2.20 balm	2.20 balsam	2.20 ban	2.40 banana	2.60 barb	2.60 bandage	2.80 bandit	2.80 bang	2.80 bangle
Short Bushing Code Word	5	\$1.00 banish	1.00 banister	1.00 banio	1.00 bank					
Long Bushing Code Word	6	\$2.00 banquet	2.00 bantam	2.00 banter	2.00 banyan	2.00 baobab	2.00 bard	2.00 bare	2.00 bargain	2.00 bark
Centering Guide Ring Code Word	7	\$.20 barley	.20 barn	.20 baronet	.20 barrack	.80 barrell	.80 barren	.80 barrier	.80 barter	.80 basalt
Nut Code Word	8	\$.20 basic	.20 basil	.20 basis	.20 bask	.20 bassoon	.20 baste	.20 bastile	.20 bastion	.20 batch
Feed Nut Code Word	9	\$.80 bath	.80 batist	.80 batten	.80 battle	.80 bauble	.80 bawd	.80 bayonet	.80 bayou	.80 bazaar
Ratchet Collar Code Word	10	\$.40 beadle	.40 beak	.40 beard	.40 beast	.60 bean	.60 beauty	.60 becalm	.60 bead	.60 beckon
Ratchet Frame Code Word	11	\$3.00 bedding	3.00 bedim	3.00 bedlam	3.00 bedtick	3.25 beetle	3.25 befall	3.25 befit	3.25 beer	3.25 beget
Ratchet Pawl Code Word	12	\$.40 beggar	.40 beguile	.40 belch	.40 belfry	.40 belie	.40 belly	.40 bend	.40 benign	.40 belvedere
Ratchet Wheel Code Word	13	\$1.60 beaver	1.60 beck	1.60 bed	1.60 beef	1.60 beg	1.60 bell	1.60 bellow	1.60 belt	1.60 bench
Split Cotter and Stop Code Word	14	\$.40 beset	.40 besiege	.40 besom	.40 bestow					
Stop Bolt Code Word	15	\$.20 bestride	.20 bet	.20 betoken	.20 best	.20 betray
Frame Code Word	16	\$11.60 bevy	11.60 bias	11.60 bib	11.60 biceps	22.00 bicker	22.00 bicycle	22.00 bid	22.00 bide	22.00 big
Feed Rod Code Word	17	\$1.50 bigamy	1.50 bilge	1.50 bilious	1.50 bind	1.50 binnacle	1.50 birch	1.50 bird	1.50 biped	1.50 bis
Feed Wedge Code Word	18	\$3.40 berry	3.40 berth	3.40 bevel	3.40 bijou	3.40 bile	3.40 bilk	3.40 billy	3.40 billion	3.40 bin
Gutter Wheel Code Word	19	\$.50 bamboo	.50 band	.50 banner	.50 barber	.50 barge	.50 baron	.50 base	.50 basin	.50 bass
Cutter Carrier Code Word	20	\$1.60 bat	1.60 bate	1.60 bawl	1.60 bay	1.60 be	1.60 beach	1.60 beacon	1.60 beam	1.60 bear
Roll for single roller carrier Code Word	21	\$.50 biscuit	.50 bishop	.50 blare	.50 blast	.50 bleak
Single Roller Carrier Code Word	22	\$				1.60 bison	1.60 blab	1.60 black	1.60 blade	1.60 blank
Rolls for double roller carrier Code Word	23	\$.50 blink	.50 blend	.50 bliss	.50 block	.50 blonde
Double Roller Carrier Code Word	24	\$				3.20 bloom	3.20 blot	3.20 blue	3.20 blunt	3.20 boar

Discount

Hilles & Jones
and
Pratt & Whitney

Standard
Punches

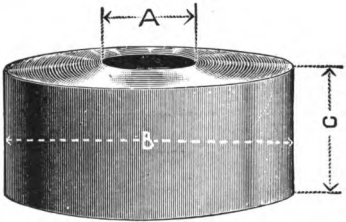


No. of Punch	List Price Each	DIMENSIONS				Discount per Doz.	Discount per 100 One Size Shank
		A	B	C	D		
2	\$.88	$\frac{1}{8}$ to $\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{9}{16}$		
3	.50	$\frac{1}{8}$ to $\frac{9}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$		
4	.75	$\frac{1}{4}$ to $1\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{2}$		
5	1.08	$\frac{3}{8}$ to 1	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{1}{2}$		
6	1.20	$\frac{1}{2}$ to $1\frac{1}{4}$	$1\frac{7}{8}$	$1\frac{3}{4}$	$2\frac{3}{8}$		
7	2.00	$1\frac{1}{4}$ to $1\frac{3}{4}$	$1\frac{7}{8}$	$1\frac{11}{16}$	$2\frac{1}{8}$		
8	3.00	1 to $1\frac{3}{4}$	$1\frac{5}{8}$	$2\frac{1}{8}$	3		
9	5.00	$1\frac{1}{2}$ to $2\frac{1}{4}$	$2\frac{9}{16}$	$2\frac{1}{8}$	3		
10	6.50	2 to $2\frac{5}{8}$	$2\frac{11}{16}$	$2\frac{1}{2}$	3		

Discount _____

Hilles & Jones
and
Pratt & Whitney

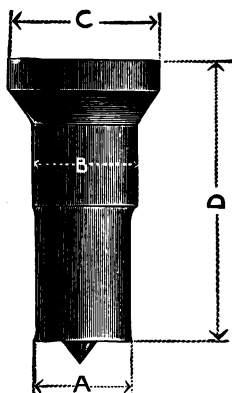
Standard
Dies



No. of Die	List Price Each	DIMENSIONS			Discount per Doz.	Discount per 100 One Diameter
		A	B	C		
2	\$.75	$\frac{1}{8}$ to $\frac{5}{16}$	$\frac{3}{4}$	$\frac{5}{8}$		
3	1.00	$\frac{1}{8}$ to $\frac{9}{16}$	1	$\frac{3}{4}$		
4W	1.70	$\frac{1}{4}$ to $\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$		
5	2.00	$\frac{3}{8}$ to 1	2	1		
5W	2.40	$\frac{1}{2}$ to $1\frac{1}{8}$	$2\frac{3}{8}$	$1\frac{1}{4}$		
6	2.50	$\frac{1}{2}$ to $1\frac{1}{4}$	$2\frac{3}{8}$	$1\frac{1}{4}$		
6W	4.00	$\frac{1}{2}$ to $1\frac{3}{8}$	$2\frac{1}{8}$	$1\frac{1}{2}$		
7	4.50	$\frac{3}{4}$ to $1\frac{9}{16}$	$2\frac{7}{8}$	$1\frac{1}{4}$		
7H	4.65	$\frac{3}{4}$ to $1\frac{9}{16}$	$2\frac{1}{8}$	$1\frac{1}{4}$		

Discount _____

Richard's Standard Punches

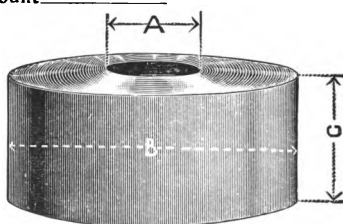


No. of Punch	List Price Each	DIMENSIONS				Discount per Doz.	Discount per 100 One Size Shank
		A	B	C	D		
0	\$.35	$\frac{5}{8}$ to $1\frac{1}{8}$	$\frac{1}{8}$	$\frac{9}{16}$	$1\frac{1}{4}$		
1	.40	$\frac{9}{8}$ to $\frac{9}{8}$	$\frac{1}{8}$	$\frac{3}{4}$	$1\frac{1}{2}$		
2	.60	$\frac{9}{8}$ to $1\frac{1}{8}$	$\frac{1}{8}$	1	$1\frac{1}{2}$		
3S	.70	$\frac{9}{8}$ to $\frac{9}{8}$	$\frac{1}{8}$	1	$1\frac{7}{8}$		
3	.90	$\frac{9}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{7}{8}$		
4S	1.00	$\frac{9}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$2\frac{1}{4}$		
4	1.40	$1\frac{1}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{1}{4}$		
5S	1.50	$1\frac{1}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{5}{8}$		
5	2.00	$1\frac{1}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{7}{8}$	$2\frac{5}{8}$		
6	4.00	$1\frac{1}{8}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{7}{8}$		
7	6.00	$1\frac{1}{8}$ to $2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{1}{2}$	$2\frac{7}{8}$		
8	9.00	$1\frac{1}{8}$ to $2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{7}{8}$	3		
9	12.00	$2\frac{1}{8}$ to $3\frac{1}{8}$	$3\frac{1}{8}$	$3\frac{7}{8}$	3		
10	16.00	$2\frac{1}{8}$ to $3\frac{1}{8}$	$3\frac{1}{8}$	$3\frac{7}{8}$	$3\frac{1}{2}$		
11	20.00	$3\frac{1}{8}$ to $4\frac{1}{8}$	$4\frac{1}{8}$	$4\frac{5}{8}$	$3\frac{1}{2}$		

Shearing
Punches
with mov-
able Centers

Discount _____

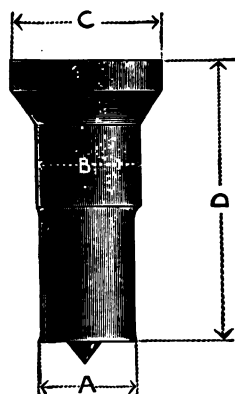
Richard's Standard Dies



No. of Die	List Price Each	DIMENSIONS			Discount per Doz.	Discount per 100 One Diameter
		A	B	C		
1	\$ 1.00	$\frac{1}{8}$ to $\frac{9}{16}$	$1\frac{1}{4}$	$\frac{3}{4}$		
2	1.50	$\frac{1}{4}$ to $\frac{1}{2}$	$1\frac{5}{8}$	$\frac{7}{8}$		
3	2.00	$\frac{1}{4}$ to $1\frac{1}{8}$	2	1		
5	4.50	$\frac{1}{2}$ to $1\frac{1}{8}$	$2\frac{7}{8}$	$1\frac{1}{8}$		
7	8.00	$1\frac{1}{4}$ to $2\frac{1}{8}$	$3\frac{7}{8}$	$1\frac{1}{4}$		
9	14.00	$2\frac{1}{8}$ to $3\frac{1}{8}$	$5\frac{1}{8}$	$1\frac{1}{2}$		
11	20.00	$3\frac{1}{8}$ to $4\frac{1}{8}$	$6\frac{3}{8}$	$1\frac{1}{2}$		

Discount _____

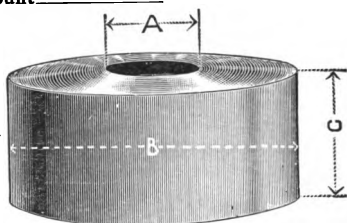
Cleveland Standard Punches



No. of Punch	List Price Each	DIMENSIONS				Discount per Doz.	Discount per 100 One Size Shank
		A	B	C	D		
1	\$.40	$\frac{1}{8}$ to $\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{4}$	$2\frac{1}{8}$		
2	.45	$\frac{1}{4}$ to $1\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$2\frac{1}{8}$		
3	.50	$\frac{9}{16}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{7}{8}$	$2\frac{1}{8}$		
4	.65	$1\frac{3}{8}$ to $1\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{5}{8}$	$2\frac{1}{8}$		
5	1.00	$1\frac{1}{2}$ to $1\frac{9}{8}$	$1\frac{9}{8}$	$1\frac{3}{2}$	$2\frac{5}{8}$		
6	1.85	$1\frac{9}{8}$ to 2	$2\frac{1}{8}$	$2\frac{9}{8}$	$2\frac{5}{8}$		

Discount _____

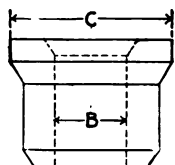
Cleveland Standard Dies



No. of Die	List Price Each	DIMENSIONS			Discount per Doz.	Discount per 100 One Diameter
		A	B	C		
00	\$.70	$\frac{1}{4}$ to $1\frac{5}{16}$	$1\frac{1}{2}$	1		
0	.75	$\frac{1}{4}$ to $1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{8}$		
1	.80	$\frac{3}{8}$ to $1\frac{1}{4}$	2	$1\frac{1}{8}$		
2	2.00	$\frac{1}{2}$ to $1\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{4}$		

Discount _____

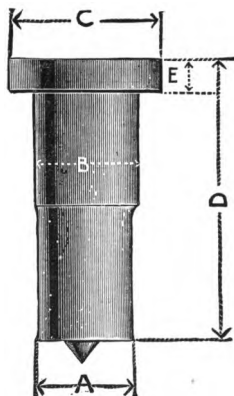
Cleveland Standard Sleeves



No. of Sleeve	List Price Each	DIMENSIONS			Discount per Doz.	Discount per 100 One Diameter
		Sleeve used with	B	C		
1	\$.45	No. 1 Punch	$\frac{9}{16}$	$1\frac{7}{8}$		
2	.50	No. 2 Punch	$\frac{3}{4}$	$1\frac{7}{8}$		

Discount _____

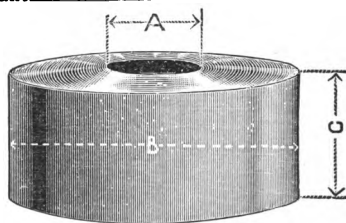
Wiedeke Standard Screw Punches



No. of Punch	List Price Each	DIMENSIONS					Discount per Doz.	Discount per 100 One Size Shank
		A	B	C	D	E		
1	\$.60	$\frac{1}{8}$ to $\frac{7}{8}$	$\frac{9}{16}$	$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{3}{8}$		
2	.80	$\frac{1}{4}$ to $\frac{9}{16}$	$1\frac{1}{8}$	$\frac{7}{8}$	$1\frac{7}{8}$	$\frac{7}{8}$		
3	.90	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{3}{8}$	1	$2\frac{1}{8}$	$\frac{1}{4}$		
4	.95	$\frac{1}{2}$ to $\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$\frac{1}{4}$		
5	.95	$\frac{1}{2}$ to $\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$\frac{5}{16}$		
6	1.00	$\frac{1}{2}$ to $\frac{7}{8}$	$\frac{8}{8}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$\frac{1}{4}$		
7	1.10	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$2\frac{3}{8}$	$\frac{1}{4}$		
8	1.15	$\frac{1}{2}$ to 1	1	$1\frac{3}{8}$	$2\frac{5}{8}$	$\frac{3}{8}$		
9	1.20	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{5}{8}$	$2\frac{5}{8}$	$\frac{3}{8}$		
10	1.30	$\frac{3}{4}$ to $1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{7}{8}$	$2\frac{5}{8}$	$\frac{3}{8}$		

Discount _____

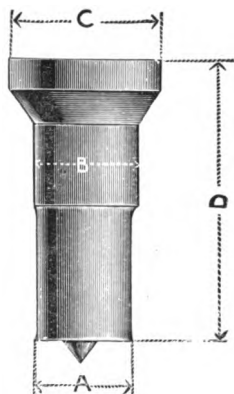
Wiedeke Standard Dies



No. of Die	List Price Each	DIMENSIONS			Discount per Doz.	Discount per 100 One Diameter
		A	B	C		
1	\$ 1.00	$\frac{1}{8}$ to $\frac{3}{8}$	1	$\frac{3}{4}$		
2	1.00	$\frac{1}{8}$ to $\frac{9}{16}$	$1\frac{1}{4}$	$\frac{3}{4}$		
3	1.20	$\frac{1}{4}$ to $1\frac{1}{8}$	$1\frac{1}{2}$	1		
4	1.70	$\frac{1}{4}$ to $\frac{7}{8}$	$1\frac{3}{4}$	1		
5	2.00	$\frac{1}{4}$ to $1\frac{1}{8}$	2	1		
6	2.25	$\frac{1}{2}$ to $1\frac{1}{8}$	$2\frac{1}{8}$	1		
7	2.50	$\frac{1}{2}$ to $1\frac{1}{8}$	$2\frac{1}{4}$	1		
8	4.70	1 to $1\frac{9}{16}$	$2\frac{1}{8}$	$1\frac{1}{4}$		
9	14.00	2 to $3\frac{1}{8}$	$5\frac{1}{8}$	$1\frac{3}{8}$		
10	20.00	3 to $4\frac{1}{8}$	$6\frac{3}{8}$	$1\frac{1}{2}$		

Discount _____

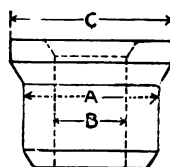
Wiedeke Standard Punches



No. of Punch	List Price Each	DIMENSIONS				Discount per Doz.	Discount per 100 One Size Shank
		A	B	C	D		
1	\$.50	$\frac{1}{8}$ to $\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{8}$	$1\frac{1}{2}$		
2	.60	$\frac{1}{4}$ to $\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{4}$	$1\frac{1}{4}$		
3	.70	$\frac{1}{4}$ to $\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{2}$	$1\frac{5}{8}$		
4	.70	$\frac{1}{4}$ to $\frac{3}{4}$	$\frac{3}{4}$	1	$1\frac{7}{8}$		
5	.80	$\frac{1}{4}$ to $\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{2}$	$2\frac{1}{4}$		
6	.80	$\frac{1}{4}$ to $\frac{3}{8}$	$\frac{3}{8}$	1	$1\frac{7}{8}$		
7	.80	$\frac{1}{4}$ to $\frac{3}{8}$	$\frac{3}{8}$	1	$1\frac{1}{2}$		
8	.90	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	2		
9	.95	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$2\frac{1}{4}$		
10	1.00	$\frac{1}{2}$ to $1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$2\frac{1}{2}$		
11	1.40	$\frac{3}{4}$ to $1\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{1}{2}$	$2\frac{3}{4}$		
12	2.00	$\frac{1}{2}$ to $1\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$2\frac{5}{8}$		
13	8.00	$1\frac{1}{8}$ to $2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	3	Shearing Punches with mov- able Spring Center	
14	10.00	$2\frac{1}{8}$ to $2\frac{3}{8}$	$2\frac{3}{8}$	$2\frac{1}{2}$	3		
15	14.00	$2\frac{5}{8}$ to $3\frac{1}{8}$	$3\frac{1}{8}$	$3\frac{5}{8}$	3		
16	18.00	$3\frac{1}{8}$ to $3\frac{5}{8}$	$3\frac{5}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$		
17	20.00	$3\frac{5}{8}$ to $4\frac{1}{8}$	$4\frac{1}{8}$	$4\frac{3}{8}$	$3\frac{1}{2}$		

Discount _____

Wiedeke (Tool Steel) Standard Sleeves



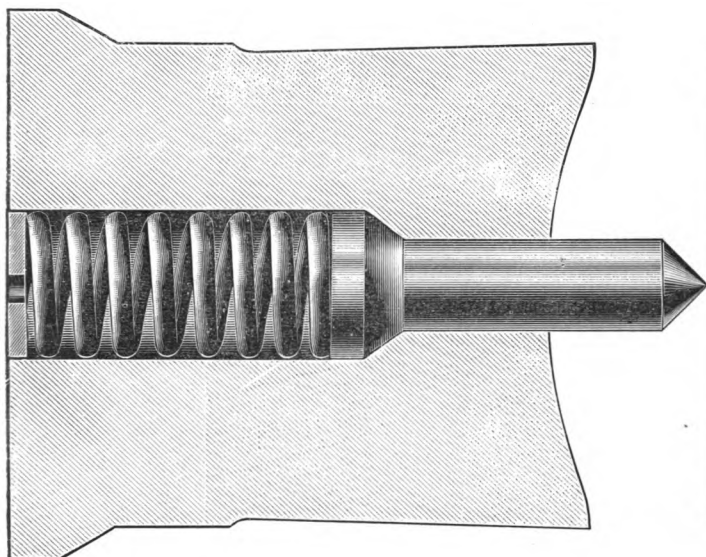
No. of Sleeve	List Price Each	DIMENSIONS			Discount per Doz.	Discount per Piece
		A	B	C		
1	\$.75	$1\frac{1}{8}$	$\frac{9}{16}$	$1\frac{1}{4}$		
2	.75	$1\frac{1}{8}$	$\frac{3}{16}$	$1\frac{1}{4}$		
3	.85	$1\frac{7}{8}$	$\frac{3}{8}$	$1\frac{3}{8}$		
4	.85	$1\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$		
5	1.25	$1\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{2}$		
6	1.25	$1\frac{9}{16}$	$1\frac{1}{8}$	$1\frac{3}{4}$		
7	1.50	$1\frac{3}{8}$	$1\frac{1}{8}$	$1\frac{7}{8}$		

Discount _____

All other sizes made to order

Improved Tube Hole Shearing Punches

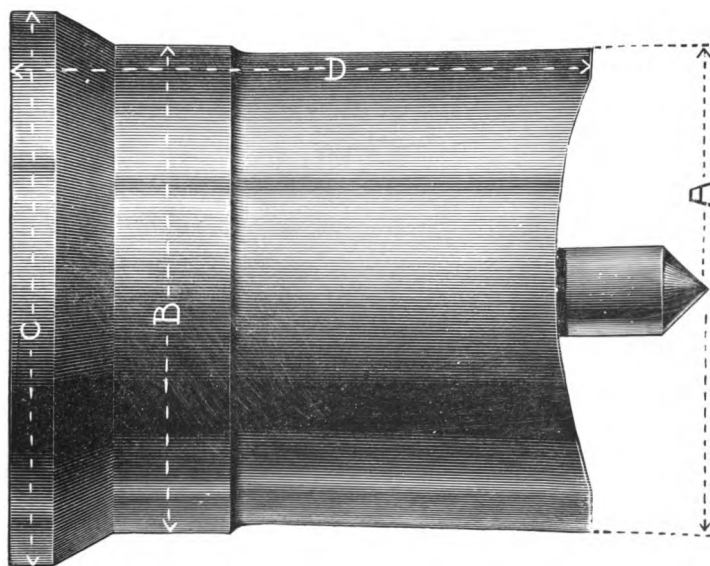
(Wiedeke Pattern)



No. of Punch	List Price Each	DIMENSIONS				For Size Tube Used
		A	B	C	D	
A	\$10.00	2 ⁹ / ₈	2 ⁹ / ₁₆	2 ³ / ₄	3	2
B	10.00	2 ³ / ₈	2 ⁵ / ₁₆	2 ³ / ₄	3	2 ¹ / ₄
C	10.00	2 ⁷ / ₈	2 ⁹ / ₁₆	2 ³ / ₄	3	2 ¹ / ₂
D	20.00	3 ¹ / ₈	4 ¹ / ₁₆	4 ³ / ₈	3 ¹ / ₂	3
E	20.00	3 ⁷ / ₈	4 ¹ / ₁₆	4 ³ / ₈	3 ¹ / ₂	3 ¹ / ₂
F	20.00	4 ¹ / ₈	4 ¹ / ₁₆	4 ³ / ₈	3 ¹ / ₂	4

Discount _____

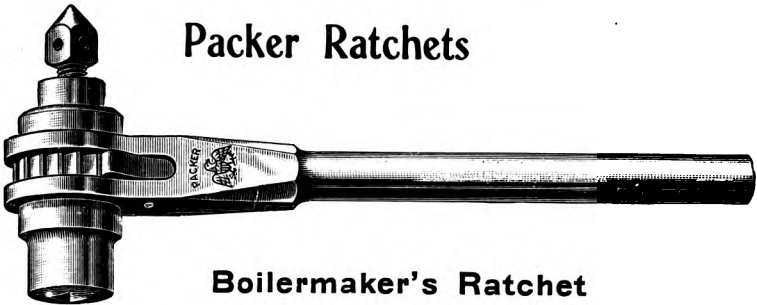
All other sizes made to order



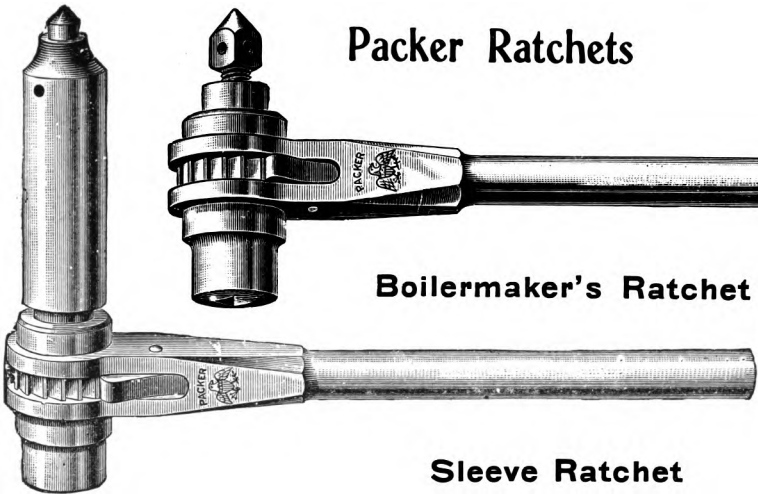
The above illustrations show our Improved Double Shearing Punches, outer and sectional view, for punching tube and pipe holes, in boiler sheets and heads. It has a spring center reaching out about three-fourths of an inch, by which means the center mark on a boiler head can be quickly found. This punch cuts in on two sides, and shears off inward, which makes a perfect round hole, and does not bend or warp the boiler head any, no matter how close one hole is punched to the other.

We have received statements from many boiler manufacturers saying that our Punches do not require as much power, and that they can use lighter machines, which is evidence that it punches easier than other makes. They also testify to the fact that they punch a straight and smooth hole, so that reaming is not necessary.

Packer Ratchets



Boilermaker's Ratchet



Sleeve Ratchet

These Ratchets are adapted for Square Shank Drills only

List Price

No. 1	Boiler Ratchet, 10-in. handle	each, \$ 9.00
" 2	" " 12-in. "	" 10.50
" 1	Sleeve Ratchet, 10-in. "	" 10.50
" 2	" " 12-in. "	" 13.50
" 3	" " 16-in. "	" 16.00
" 4	" " 18-in. "	" 19.00
" 5	" " 24-in. "	" 23.00

Discount.....

Flat and Pipe Drills

For Packer Ratchets



List Price

Flat Drills

Sizes,	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	1 7/8	2	2 1/2	inches
Prices, \$	0.40	.40	.40	.40	.40	.45	.45	.45	.50	.55	.60	.65	.75	1.00	1.00 each

Discount.....

Pipe Drills

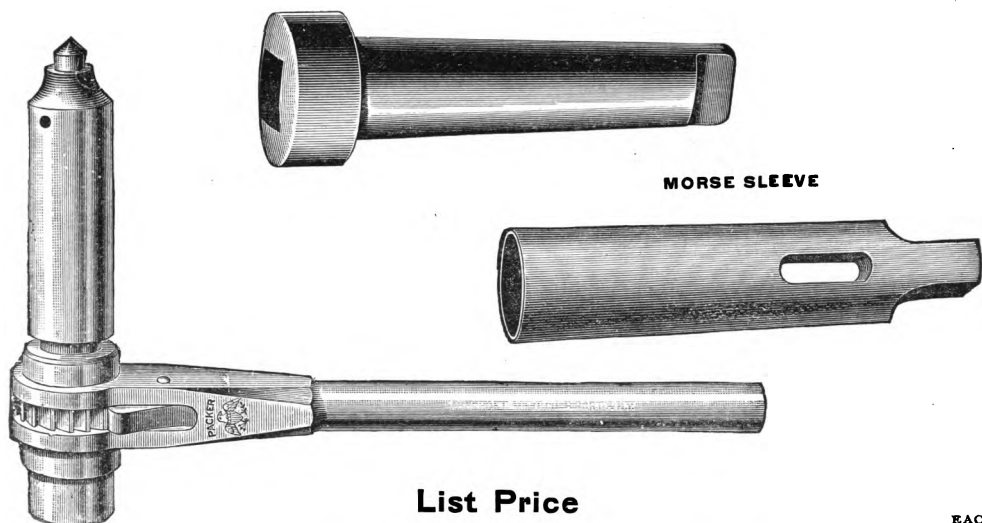
Sizes,	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	inches
Price, \$	0.91	.91	.95	.98	1.04	1.14	1.23	1.35	1.56	1.80	3.25	each

Discount.....

Packer Ratchets "A"

With Morse Taper Shank Holes in Sockets

SOCKET FOR SQUARE SHANK DRILL



List Price

		EACH
No. 2A	Ratchet 12-in. handle taking Morse Taper Shank drills $\frac{5}{8}$ -in. to $\frac{3}{2}$ -in.	\$16.00
No. 1	Morse Sleeve taking Taper Shank drills $\frac{1}{4}$ -in. to $\frac{1}{2}$ -in. and fitting No. 2A Ratchet	1.80
No. 3A	Ratchet 16-in. handle taking Morse Taper Shank drills $\frac{1}{2}$ -in. to $1\frac{1}{4}$ -in.	20.00
No. 2	Morse Sleeve taking Taper Shank drills $\frac{5}{8}$ -in. to $\frac{3}{2}$ -in. and fitting No. 3A Ratchet	2.40
No. 4A	Ratchet 18-in. handle taking Morse Taper Shank drills $1\frac{3}{8}$ -in. to 2-in.	25.00
No. 3	Morse Sleeve taking Taper Shank drills $\frac{1}{2}$ -in. to $1\frac{1}{4}$ -in. and fitting No. 4A Ratchet	3.00
No. 2	Square Socket, fitting No. 2A Ratchet.....	1.75
No. 3	Square Socket, fitting No. 3A Ratchet.....	1.75
No. 4	Square Socket, fitting No. 4A Ratchet.....	2.25

Discount.....

NOTE

No. 2A Packer Ratchet with No. 1 Morse Sleeve will take Taper Shank drills from $\frac{1}{4}$ to $\frac{3}{2}$, inclusive.

No. 3A Packer Ratchet with No. 1 and No. 2 Morse Sleeve will take Taper Shank drills from $\frac{1}{4}$ to $1\frac{1}{4}$, inclusive.

No. 4A Packer Ratchet with Nos. 1, 2 and 3 Morse Sleeve will take Taper Shank drills from $\frac{1}{4}$ to 2 inches, inclusive.

Universal Ratchet

(Patented)

ESPECIALLY ADAPTED TO DRILLING HOLES IN CRAMPED PLACES

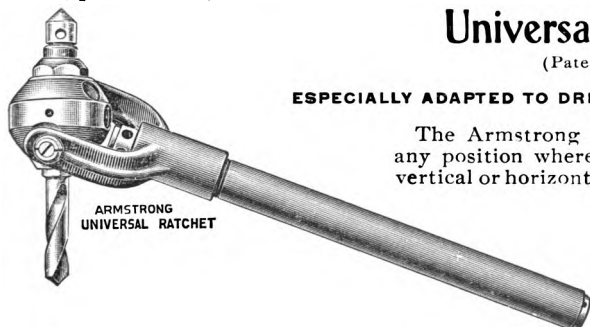
The Armstrong Universal Ratchet will drive a drill in any position where it is possible to move the handle in a vertical or horizontal direction or at any intermediate angle.

Two inches of motion at end of handle in any direction will drive the drill.

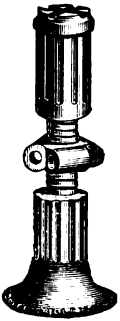
List Price

No. 4	Drills up to 1-in.	\$12.00
No. 6	Drills up to 2-in.	18.00

Discount.....



Double Movement Jack



Double movement Truck Box Screw Jack. Is suitable for Cars, Tenders, etc., or any heavy service of the kind. All of this style of Jacks are highly appreciated, as they work twice as rapidly as the common Screw Jack and require no more power.

Height of Jack when down 10 inches.
 Rise of Screw 4 inches.
 Diameter of Screw 2 inches.
 Weight of Jack 21 pounds.
 Capacity 12 tons.

Price, with Forked Lever Ratchet \$10 00
 " with Six-way Head 8 00
 " with Spring Ratchet 15 00

Discount

Bell Base Jacks



In these Jacks the Base is made of Malleable Iron, and the Screw is made of high grade machinery steel. The Screws are our style of bracket thread (half square and half V), with the square side to the load. The Base is closed to keep the dirt from coming in contact with the Screw, and the Cap is thoroughly protected from the dust, being accurately fitted with special tools and covering the top of the Screw entirely.

No. of Jack	Height when Down.	Diameter of Screw	Rise	Weight	Capacity	Price with Six-way Head	Price with Spring Ratchet
101.....	10 in....	2 in....	4 1/2 in....	22 lbs....	12 tons...	\$ 5 00....	\$11 00
102.....	12 "....	2 "....	6 1/2 "....	26 "....	12 "....	5 50....	11 50
103.....	14 "....	2 "....	8 1/2 "....	30 "....	12 "....	6 00....	12 00
111.....	10 "....	2 1/4 "....	4 1/2 "....	25 "....	15 "....	5 75....	13 75
112.....	12 "....	2 1/4 "....	6 "....	28 "....	15 "....	6 35....	14 35
113.....	14 "....	2 1/4 "....	8 "....	34 "....	15 "....	7 00....	15 00
120.....	10 "....	2 1/2 "....	5 1/2 "....	35 "....	25 "....	7 50....	15 50
121.....	12 "....	2 1/2 "....	7 1/2 "....	36 "....	25 "....	8 25....	16 25
122.....	14 "....	2 1/2 "....	9 "....	41 "....	25 "....	9 00....	17 00
123.....	16 "....	2 1/2 "....	9 "....	45 "....	25 "....	9 75....	17 75
124.....	18 "....	2 1/2 "....	11 "....	50 "....	25 "....	10 50....	18 50
125.....	20 "....	2 1/2 "....	13 "....	50 "....	25 "....	11 25....	19 25
126.....	22 "....	2 1/2 "....	15 "....	57 "....	25 "....	12 00....	20 00
127.....	24 "....	2 1/2 "....	17 "....	61 "....	25 "....	12 75....	20 75
130.....	30 "....	2 1/2 "....	23 "....	81 "....	25 "....	15 00....	24 00
132.....	12 "....	3 "....	4 "....	49 "....	50 "....	12 00....	22 00
133.....	14 "....	3 "....	6 "....	55 "....	50 "....	13 00....	23 00
134.....	16 "....	3 "....	8 "....	64 "....	50 "....	14 00....	24 00
135.....	18 "....	3 "....	10 "....	67 "....	50 "....	15 00....	25 00
136.....	20 "....	3 "....	12 "....	77 "....	50 "....	16 00....	26 00
137.....	22 "....	3 "....	14 "....	83 "....	50 "....	17 00....	27 00
138.....	24 "....	3 "....	16 "....	100 "....	50 "....	18 00....	28 00
140.....	28 "....	3 "....	20 "....	118 "....	50 "....	20 00....	30 00
141.....	30 "....	3 "....	22 "....	114 "....	50 "....	21 00....	31 00
164.....	17 "....	4 "....	8 "....	140 "....	35 "....	30 00....	42 00

Discount

Rapid Moving Screw Jack



We call it the rapid moving jack because the screw, when the load is off, can be raised immediately to any desired point, and when up can be as quickly let down, thus saving the tedious operation of turning the screw up or down, as in all other screw jacks.

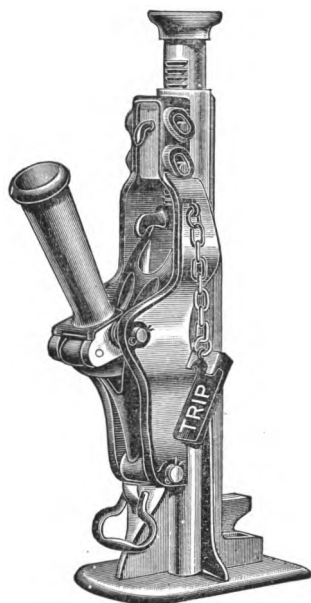
The two segmental nuts are made of gun metal, and are supported on steel pins moving in angular slots so as to allow them to move in and out of gear; and in addition, when in gear, the base of the nuts rests on the bottom of the mortise.

Height of Jack when down.....	22 inches.
Rise of Screw.....	11 inches.
Diameter of Screw.....	2 inches.
Weight of Jack.....	52 pounds.
Capacity.....	8 tons.

Price, with Forked Lever Ratchet.....	\$30 00
“ with Spring Ratchet.....	35 00
“ with Six-way Head.....	28 00

Discount.....

Compound Lever Track Jack



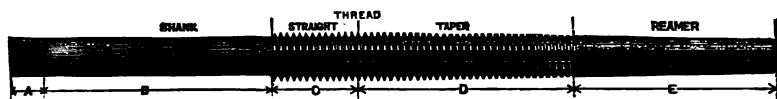
In our compound Lever Jacks we use the Toggle, which is the most powerful mechanical movement known. This Jack is used for heavy track and yard work and is provided with a trip, so that when liable to be caught by a train the Jack can be relieved of its load in a moment and pulled out of the way.

Height when down.....	29 inches.
Rise of Bar.....	14 inches.
Size of Bar—round.....	2 inches.
Weight of Jack.....	91 pounds.
Capacity.....	12 tons.

List Price.....	\$30 00
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Discount.....

Common Stay Bolt Tap



In ordering, state diameter and number threads per inch, also length of parts at A, B, C, D, and E.

All Stay Bolt Taps made with twelve threads to the inch, unless otherwise ordered.

Patent Adjustable Stay Bolt Tap

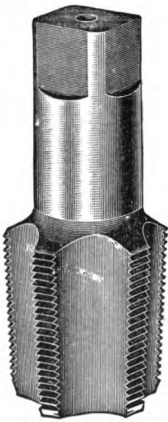


Our Patent Adjustable Stay Bolt Tap for boiler-makers' use is made with a threaded sleeve fitted on shank of tap, so that it will slide freely on same. The sleeve is threaded at the same time as the tap, thereby insuring the agreement of the threads on tap and sleeve. The sleeve being adjustable, as shown, sheets at different distances apart can be tapped with the same tap. A very much shorter thread can be used, thus avoiding the change in hardening of a long thread, thereby obtaining greater accuracy in the taps as well as a great saving of time in tapping with them.

DIAMETER	WHOLE LENGTH—PRICE EACH OF PATENT ADJUSTABLE AND COMMON STAY BOLT TAPS											
	16 Inch	18 Inch	21 Inch	24 Inch	27 Inch	30 Inch	33 Inch	36 Inch	39 Inch	42 Inch	48 Inch	54 Inch
$\frac{3}{4}$ $1\frac{1}{8}$ $\frac{7}{8}$	\$ 5.60	\$ 7.20	8.00	\$ 8.80	\$ 10.90	\$ 13.00	\$ 14.00	\$ 15.00	\$ 16.50	\$ 18.00	\$ 19.00	\$ 20.00
$1\frac{1}{8}$ 1	6.60	8.50	9.35	10.20	12.25	14.25	15.40	16.50	18.15	19.75	21.00	22.25
$1\frac{1}{4}$ $1\frac{1}{2}$	7.60	9.50	10.35	11.20	13.25	15.25	16.40	17.50	20.00	22.00	23.50	25.00
$1\frac{3}{8}$ $1\frac{1}{2}$	9.00	10.50	12.00	12.75	14.75	16.50	18.00	19.50	22.00	24.00	25.50	27.00
$1\frac{5}{8}$ $1\frac{3}{4}$	11.00	12.50	14.00	15.00	17.00	18.50	20.00	21.50	24.00	26.00	28.00	30.00
$1\frac{7}{8}$ $1\frac{1}{2}$	13.00	14.50	16.00	17.00	19.00	20.00	22.00	23.50	26.00	28.00	30.00	32.00

Discount.....

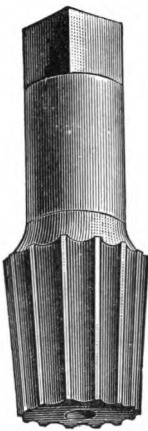
Pipe Taps, Hobs, and Reamers



PIPE TAP



PIPE HOB



PIPE REAMER

Taps and Hobs, either Right or Left Hand. All Pipe Taps are sent with right hand threads unless left hand are specified.

SIZES, Inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Price, each, Taps, Hobs and Reamers	\$ 1 12	\$ 1 25	\$ 1 50	\$ 1 87	\$ 2 50	\$ 3 12	\$ 3 75	\$ 4 62	\$ 6 25	\$10 50	\$15 00	\$22 00	\$33 00
No. of Threads to Inch	27	18	13	11	14	11 1/2	11 1/2	11 1/2	11 1/2	8	8	8	8

Discount.....

Tube Hole Reamer



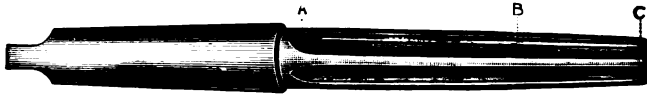
These Reamers are made of the best tool steel, the Reamer shell is 3 inches long, taper 1 inch to the foot, which enables you to ream the front heads larger than the back heads in the fire box.

All Reamers are furnished with Standard Morse Taper Shank No. 4, unless instructed otherwise.

Size, Inches.....	1 3/4	1 7/8	2	2 1/8	2 1/4	2 1/2	3	3 1/4	3 1/2	4
Price, Complete.....	\$ 8 00	8 00	8 00	9 00	9 00	10 00	12 00	13 00	14 00	15 00

Discount.....

Air Drill Reamers



These reamers can be used in drill presses in the shop or in the pneumatic or other portable tools outside. They are made from the very best tool steel and are reliable, durable and inexpensive. They are made with five flutes, and while plainly finished, they are sufficiently accurate for the purpose intended.

Diameter at			Price Each	No. of Taper Shank	Length Over All	Length of Flute
A	B	C				
$\frac{1}{2}$ in.	$\frac{1}{2}$ in.	$\frac{3}{8}$ in.	\$2.75	No. 2	9 in.	$5\frac{1}{4}$ in.
$\frac{9}{16}$	$\frac{9}{16}$	$\frac{7}{16}$	2.80	2	9	$5\frac{1}{4}$
$\frac{5}{8}$	$\frac{5}{8}$	$\frac{1}{2}$	2.90	2	10	$6\frac{1}{4}$
$\frac{11}{16}$	$\frac{11}{16}$	$\frac{9}{16}$	3.00	3	11	$6\frac{5}{8}$
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{8}$	3.10	3	12	$7\frac{5}{8}$
$\frac{13}{16}$	$\frac{13}{16}$	$\frac{3}{4}$	3.30	3	12	$7\frac{5}{8}$
$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	3.50	3	12	$7\frac{5}{8}$
$1\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	3.70	3	12	$7\frac{5}{8}$
1	1	$1\frac{1}{8}$	3.90	3	12	$7\frac{5}{8}$
$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	4.10	3	12	$7\frac{5}{8}$
$1\frac{1}{4}$	$1\frac{1}{4}$	1	4.30	3	12	$7\frac{5}{8}$
$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{1}{2}$	4.50	3	12	$7\frac{5}{8}$
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{3}{4}$	5.00	3	12	$7\frac{5}{8}$
$1\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$	5.30	3	12	$7\frac{5}{8}$

Discount.....

Hand Rivet Hole Reamers



Our handy Reamer for reaming rivet holes in shells or boiler heads, can also be used by air and flexible drill as well as by hand. The diameters at A, B and C of these Reamers are the same as on the air drill reamer shown above. They are made of the very best tool steel, and while plainly finished, they are sufficiently accurate for the purpose intended.

All Reamers $\frac{1}{2}$ inch to $1\frac{1}{8}$ inch diameter have $\frac{1}{8}$ inch square shank; $1\frac{1}{8}$ inch to $1\frac{5}{8}$ inch diameter have $\frac{3}{8}$ inch square shank, unless instructed otherwise.

Diameter, inches	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$
List Price, each	\$2.00	2.00	2.00	2.00	2.00	2.40	2.40	2.40	2.60	2.60	2.80	2.80	3.50

Discount.....

Half Round Reamers

(8 inches long)



Diameter, inches	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{7}{8}$	1
List Price, each	\$1.25	1.25	1.25	1.25	1.50	1.50	1.50

Discount.....

Burr Tool

(8 inches long)



List Price \$1.25 each

Discount.....

Roller Pipe Cutter



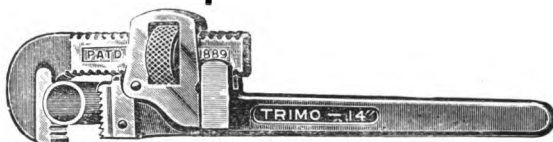
The pins in these Cutters are tapered at one end and case hardened. Don't use any other style of pin. All bearing points case hardened.

No side motion. Guaranteed to track. Stronger than any other Cutter made.

No.	Cuts.	Price.	No.	Cuts.	Price.
1.....	$\frac{1}{8}$ to $\frac{1}{4}$ in.	\$4 50	3.....	$\frac{1}{4}$ to $\frac{3}{4}$ in.	\$16 00
2.....	$\frac{1}{2}$ to 2 in.	6 75	4.....	2 to 4 in.	20 00

Discount.....

Pipe Wrench

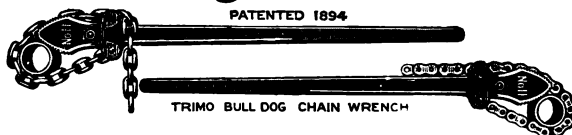


This Wrench is *drop forged* from bar steel, is *interchangeable* in all its parts, and has no wooden handle to break. Does not *lock* upon the pipe, but releases its hold readily. Grips the pipe firmly without lost motion. Does not crush the pipe nor slip. The movable jaw and the nut are made with a *round* top and bottom thread, guaranteed not to *strip* or *burr*. An *inserted* jaw is placed in the handle, which can be renewed for little expense when dull or worn.

Length open in inches..	6	8	10	14	18	24	36	48
Takes from	$\frac{1}{8}$ in. wire to $\frac{1}{2}$ in. pipe	$\frac{1}{8}$ in. wire to $\frac{3}{4}$ in. pipe	$\frac{1}{8}$ in. wire to 1 in. pipe	$\frac{1}{4}$ in. wire to $1\frac{1}{2}$ in. pipe	$\frac{1}{4}$ in. wire to 2 in. pipe	$\frac{1}{4}$ in. wire to $2\frac{1}{2}$ in. pipe	$\frac{1}{2}$ in. pipe to $3\frac{1}{2}$ in. pipe	1 in. pipe to 5 in. pipe
Price	\$2 (M)	\$2 (M)	\$2 25	\$3 00	\$4 (M)	\$6 (M)	\$12 00	\$18 00

Discount.....

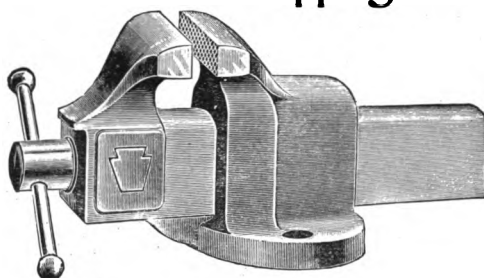
Bull Dog Chain Wrench



Size.....	No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16
Price with flat link chain, each..	\$2 50	\$3 50	\$5 00	\$7 00	\$9 00	\$11 00	\$18 00
Price with cable chain, each.....	2 25	3 25	4 50	6 25	7 70	9 60	16 00
Capacity, size pipe.....	$\frac{1}{4}$ to 1 in.	$\frac{1}{2}$ to 2 in.	$\frac{1}{2}$ to 3 in.	$\frac{3}{4}$ to 6 in.	1 to 8 in.	$1\frac{1}{2}$ to 10 in.	2 to 12 in.
Length over all.....	13 $\frac{1}{2}$ in.	20 in.	27 in.	37 in.	45 in.	54 in.	65 in.
Weight.....	3 lbs.	5 lbs.	8 $\frac{1}{4}$ lbs.	17 lbs.	30 lbs.	51 lbs.	83 lbs.
Extra flat-link chains, each.....	\$ 75	\$1 00	\$1 50	\$2 50	\$3 25	\$4 00	\$6 00
Extra cable chains, each.....	50	75	1 00	1 75	2 00	2 50	4 00
Extra jaws, per pair.....	1 00	1 75	2 75	4 00	4 75	5 50	7 50
Extra jaw bolts and nuts, each.....	20	20	20	20	25	25	30
Extra pin for fastening chain to handle.....	04	04	04	04	06	06	06
Length flat-link chain.....	9 $\frac{1}{2}$ in.	15 $\frac{1}{2}$ in.	20 $\frac{1}{2}$ in.	28 $\frac{1}{2}$ in.	37 in.	45 in.	54 $\frac{1}{2}$ in.
Length cable chain.....	9 $\frac{3}{4}$ in.	15 $\frac{1}{2}$ in.	21 in.	33 in.	39 $\frac{1}{2}$ in.	48 in.	57 in.
Average breaking strain, flat-link chain.....	4,000 lbs.	7,000 lbs.	10,500 lbs.	13,000 lbs.	15,000 lbs.	17,000 lbs.	22,000 lbs.
Average breaking strain, cable chain.....	1,200 lbs.	4,000 lbs.	6,000 lbs.	10,500 lbs.	12,500 lbs.	15,000 lbs.	19,000 lbs.
Size iron in cable chain.....	3-16 in.	9-32 in.	11-32 in.	7-16 in.	15-32 in.	17-32 in.	19-32 in.

Discount.....

Mechanics' Chipping Vise



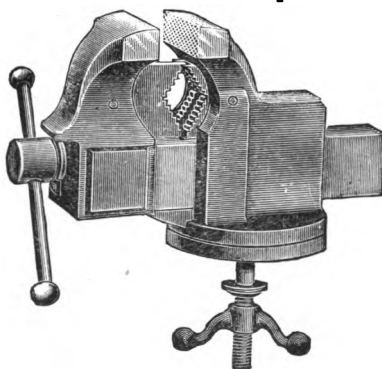
Patented.

The design and construction of the bar makes it the strongest parallel Vise on the market.

Width	Width Jaw	Opens	Weight	List Price
I	5¼ in.	9 in.	78 lbs.	\$30.00
J	6½ " "	10 " "	130 " "	45.00
L	8 " "	12½ " "	255 " "	70.00

Discount.....

Combination Pipe Vise

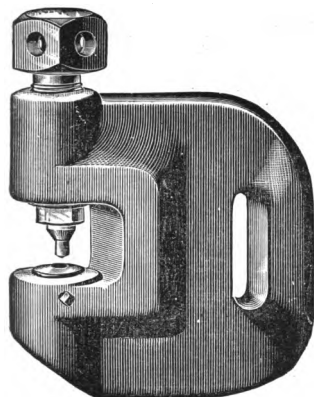


Our Vises are made of the best grade of iron, with steel jaws firmly welded and carefully tempered. The pipe jaws are made of the finest cast steel, and are cut from solid bars.

These Vises are strong in all their parts, and for workmanship, durability and convenience they are the best Vise on the market.

No.	Width Jaw	Weight	Holding Pipe	Base	List Price
100	3¼ in.	50 lbs	⅛ to 2 in.	Swivel	\$16.00
105	4 " "	65 " "	⅛ to 3 " "	Swivel	20.00
110	5 " "	116 " "	½ to 4 " "	Stationary	28.00

Discount.....



Cast Steel Screw Punches

The bodies of these Punches are made of the highest grade of steel castings, having a tensile strength of 80,000 pounds. The parts are carefully machined and fitted.

By "depth of throat" is meant actual distance from edge of sheet that tool will punch.

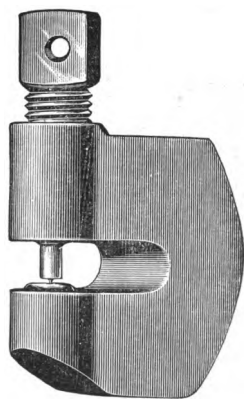
SIZE	WILL PUNCH		Depth of Throat	Weight	Price	Extra Punch and Die
	Hole	Thick.				
No. 0	1/2 in.	1/4 in.	1 1/2 in.	17 lbs.	\$24 00	\$3 50
" 1	1/2 "	1/2 "	1 1/2 "	27 "	30 00	4 00
" 2	3/4 "	1 1/2 "	2 "	40 "	40 00	4 00
" 3	3/4 "	2 1/2 "	2 1/2 "	60 "	60 00	5 00
" 3 1/2	3/4 "	3 1/2 "	3 1/2 "	90 "	75 00	5 00
" 4	3/4 "	4 "	4 "	110 "	80 00	5 00

Discount.....

Forged Steel Screw Punches

The bodies of these tools are made of forged steel. Have large screws fitted with a cap at end, which can be removed, thus permitting the use of different sizes of punch. The parts are carefully fitted by hand and arranged for greatest strength and durability. One punch and die furnished with each tool; all others extra. In ordering state size of rivet hole to be punched. No. 1, useful for punching small openings, such as flanged flue holes. No. 2 is a standard size, and adapted for the greatest variety of uses. No. 3 is very large, heavy and strong, and is made for severe work.

By "depth of throat" is meant actual distance from edge of sheet that tool will punch.



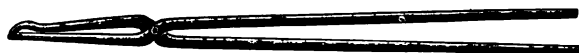
SIZE	WILL PUNCH		Depth of Throat	Weight	Price	Extra Punch and Die
	Hole	Thick.				
No. 1	3/8 in.	3/8 in.	1 1/2 in.	22 lbs.	\$30 00	\$4 00
" 2	3/4 "	1 1/2 "	2 1/2 "	48 "	40 00	4 00
" 3	3/4 "	3 "	3 "	65 "	60 00	5 00
" 4	3/4 "	4 "	4 "	100 "	80 00	5 00

Discount.....

Boiler Makers' Hand Tools

Made of the best Tool Steel

RIVET TONGS



18-in. and 30-in. lengths. Price each \$1.00

Discount

CHIPPING HAMMER



Weight $1\frac{3}{4}$ and 2 lbs. Price each \$1.60

Discount

PLUGGING HAMMER



Weight $2\frac{1}{2}$ lbs. Price each \$1.75

Discount

BEVEL FACE HAMMER



Weight $2\frac{1}{2}$ lbs. Price each \$1.80

Discount

BRIDGE BUILDER'S HAMMER No. 1



Weight 4 lbs. Price each \$1.90

Discount

BRIDGE BUILDER'S HAMMER No. 2



Weight $4\frac{1}{2}$ lbs. Price each \$1.90

Discount

PICK OR TOP HAMMER



Weight $3\frac{1}{4}$ lbs. Price each \$1.90

Discount

BOILERMAKER'S WRENCH



Are made in sizes for $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ -in. bolts.
18-in. long. Price each \$1.00

Discount

CONICAL RIVET SNAPS



Are made in sizes for
 $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{11}{8}$, and $\frac{3}{4}$ -inch rivets. Price each \$1.75
 $\frac{7}{8}$ and 1-in. rivets. Price each \$2.00

Discount

COLD CHISELS



8-in. long. Price each \$1.50

Discount

SIDE SETS



8-in. long. Price each \$1.50

Discount

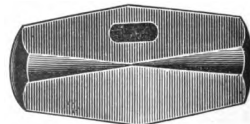
BACKING OUT PUNCH



For $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ -in. rivets. Price each \$1.75

Discount

DOUBLE FACE SLEDGE



Weight 10, 12, 14 and 16 lbs. Price \$.40 per lb.

Discount

Boiler Makers' Hand Tools

Made of the best Tool Steel

BENT CAULKING TOOL No. 1



8-in. long Price each \$.60

Discount

BENT CAULKING TOOL No. 2



8-in. long Price each \$.60

Discount

FLAT CHISEL



8-in. long Price each \$.60

Discount

CAPE CHISEL



8-in. long Price each \$.60

Discount

DIAMOND POINT CHISEL



8-in. long Price each \$.60

Discount

ROUND NOSE CHISEL AND RIVET TOOL



8-in. long Price each \$.60

Discount

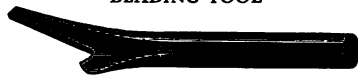
PLOW CHISEL



8-in. long Price each \$.60

Discount

BEADING TOOL



8-in. long Price each \$.75

Discount

STRAIGHT CAULKING TOOL No. 1



8-in. long Price each \$.60

Discount

STRAIGHT CAULKING TOOL No. 2



8-in. long Price each \$.60

Discount

GOUGE

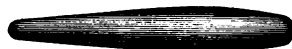


Are made for $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ in. rivets

8-in. long Price each \$.80

Discount

TOOL STEEL DRIFT PINS



Are made for $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ in. rivets

7-in. long Price each \$.60

Discount

MARKING PUNCHES



Are made for all size rivets

Sizes $\frac{1}{4}$ in. to $\frac{1}{2}$ in. 6 in. long, Price each \$1.25

Sizes $\frac{5}{8}$ in. to $\frac{3}{4}$ in. 6 in. long, Price each 1.50

Sizes $1\frac{1}{8}$ in. to $1\frac{1}{2}$ in. 7 in. long, Price each 2.00

Discount

Telegraph Code

For the convenience of our patrons who do not keep the regular "Lieber" or "A B C" Codes on file, we publish below a few code words

All telegraphic inquiries, requested to be answered by telegraph, are sent collect.

All telegraphic inquiries are answered fully by mail immediately on receipt of message.

We request that you mail confirmation of telegram (with detailed explanation of tools ordered if necessary) immediately after sending message.

We shall not be held responsible for any telegraphic or mail orders, delayed by carriers, accidents or any other delays, unavoidable or beyond our control.

All telegraphic orders are filled from written order received from local telegraph station and we shall not be responsible for loss of time, or any other loss, express or freight charges of any kind, if order was properly filled as received from local telegraph station.

Express the following tools today if possible to.....Code word—Vail

Express prepaid (add charges to invoice) the following tools today, if possible, to.....Code word—Vague

Express C. O. D. the following tools today, if possible, to.....Code word—Valet

Enter our order for the following tools and ship same by express just as soon as possible, to.....Code word—Vamp

Enter our order for the following tools and ship same by freight just as soon as possible, to.....Code word—Vase

Ship by freight prepaid (add charges to invoice) the following tools, just as soon as possible, to.....Code word—Vaunt

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Useful Information

Steam

A cubic inch of water, evaporated under ordinary atmospheric pressure, is converted into one cubic foot of steam (approximately).

Steam, at atmospheric pressure, flows into a *vacuum* at about 1,500 feet per second, and into the *atmosphere* at the rate of 650 feet per second.

Boilers require for each *nominal* horse-power about one cubic foot of feed-water per hour. A handy way of calculating the amount of water required for a boiler is to add 15 to the pressure of steam carried per square inch; divide the sum by 18, and multiply the quotient by 24. The product is the quantity, in United States gallons, per minute for each horse-power.

The best designed boilers will evaporate from 7 to 10 pounds of water per pound of good coal. The average result is from 25 to 60 per cent. below this.

In calculating the horse-power of steam boilers, consider, for tubular and flue boilers, 15 square feet of heating surface as one *nominal* horse power.

One square foot of grate surface will consume, on an average, 12 pounds of coal per hour.

To find the horse-power necessary to elevate water to a given height, multiply the total weight of the water in pounds by the height in feet, and divide the product by 33,000. An allowance of 25 per cent. should be added for water friction, and a further allowance of 25 per cent. for loss from condensation in steam cylinder, etc.

Hydraulics

A cubic foot of water weighs $62\frac{1}{2}$ pounds and contains $7\frac{1}{2}$ gallons, or 1,728 cubic inches.

A gallon of water contains 231 cubic inches, and weighs 8 1-3 pounds (United States standard.)

The friction of water in pipes is as the square of the velocity.

The capacity of pipes is as the square of their diameters; thus, doubling the diameter of a pipe increases its capacity four times.

The height of a column of fresh water, equal to the pressure of one pound per square inch, is 2.31 feet. Usually computed at 2 feet, thus allowing for friction.

To approximate the quantity of water elevated in one minute, running at 100 feet of piston speed per minute, square the diameter of water cylinder in inches, and divide by four. For example: The capacity of a $5\frac{1}{2}$ water cylinder is required. The square of the diameter is 30.25, which, multiplied by 4, gives 121, which is the number of gallons per minute.

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